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DISPATCH OF "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and machinery for such dispatch, and any reader desirous of arranging for copies to be delivered to an agent or correspondent overseas should place the order with us together with the necessary delivery instructions.*

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TO CALLERS AND TELEPHONERS

Until further notice our office hours are:—
Mondays to Fridays – 9.30 *a.m. till* 3.45 *p.m.*
The office will be closed on Saturdays

Underestimating the Enemy's Strength

RECENT articles in the press on the subject of German transport difficulties have repeated certain misleading statements which found a good deal of publicity in the early stages of the war. Because of the acknowledged danger of underestimating an enemy's strength, we have several times pointed out in these columns where the statements referred to tended to give a wrong estimation of the position so far as the German railways were concerned. We would not have returned to the subject but that so reputable a paper as *The Manchester Guardian* has lately given publicity to an article of the type mentioned. For example, statements such as that, with traffic up 10 per cent., there were about 4,000 fewer engines and 80,000 fewer wagons in 1938 than in 1929, give the impression that the equipment of the German State Railway had become roughly 20 per cent. worse in the intervening period; but this by no means follows, for mere numbers without any reference to the power and availability of the engines and the capacity and speed of turn-round of the wagons, can give no reliable indication of the true position. Similar comment applies to statistics of the numbers of engines and goods wagons per mile of line. There is no need to go into further detail in exposing the unreliable nature of such articles, but obvious facts, such as the ability of the Germans to transport the necessary men and material required for their 1940 conquests, do not substantiate the claim that their railway system was decrepit at the outset of the war. A reference back to the articles which have appeared from time to time during the last year or two in these columns describing in some detail the German State Railway system will show that it had been prepared for nearly a decade to sustain the requirements of war with a minimum of maintenance.

* * * *

Amenities for Tube Shelterers

The recent recall from retirement of Mr. J. P. Thomas to assist the London Passenger Transport Board in dealing with problems that have arisen out of the use of tube stations as air-raid shelters, and to act as the channel of communication between the board and the Government departments and local authorities concerned, has placed at the service of tube shelterers both an experienced tube railway officer and also a highly sympathetic personality. Last week we had the opportunity of viewing a number of recently-arranged facilities for tube shelterers, in company with Mr. Thomas, and there can be no doubt that he brings to the problems of these unfortunate persons a broad human understanding tempered only by his unique experience of tube-operating problems. First as an electrical contractor's resident engineer on tramway and tube railway work, and then as Assistant Engineer of the Great Northern & City Railway, Mr. Thomas acquired wide technical experience that qualified him for the responsible operating positions he later occupied. He was always a believer in the value to staff of all grades of a general operating knowledge, and was the author of a book entitled "Handling London's Underground Traffic," which on its publication in 1928 was also made available to the public. He thus took an early part in the establishment of that understanding of London passenger transport problems and achievements which the London Passenger Transport Board, through the activities of its Public Relations Department, recognises as an essential feature of its public service. In present circumstances it is impossible to over-estimate the value of both staff and public knowledge of tube operating problems in their relation to the added burden suddenly imposed by intensive air-raiding.

* * * *

Canada Buys Grand Trunk Railway Stock

Among the 60 Canadian bond and stock issues recently taken over by the Treasury under its acquisition powers was the Grand Trunk Railway of Canada perpetual 4 per cent. consolidated stock. This stock is now to be purchased by the Canadian Government and is to be repatriated to Canada; it will not be sold to the public. The Canadian Government is paying $109,000,000 for the stock, the amount of which

quoted in London was £24,624,455. The Treasury's acquisition price was £104 4s. 5d. for each £100 of stock. The stock is guaranteed by the Canadian Government and it is believed that the British Treasury may be asked not to sell other State-guaranteed railway securities involved in repatriation plans except to the Canadian Government. The general practice for dealing with securities which are subject to acquisition by the British Treasury is to sell them as opportunities are presented. Offers made by Canadian stocks which have been taken over by the Treasury are considered by the Canadian representative of the British Treasury, and the Bank of Canada acts as adviser. Every effort is made to obtain fair prices and particular care is taken to ensure that security markets are not disturbed by these transactions. Very large numbers of United States and Canadian stocks of all kinds have already been acquired by the Treasury under its requisition powers. The object of taking over these securities is to provide foreign exchange for the financing of needs arising from the war.

* * * *

Overseas Railway Traffics

The traffic returns of the Argentine railways for the 21st and 22nd weeks of the financial year have again been depressing and the Argentine North Eastern, which for the previous fortnight registered a gain, has on this occasion a net fall of 15,000 pesos. The Great Western of Brazil also shows a fall of £300 over the two weeks, although for the 48 weeks of the current year it registers an increase of £75,600 in sterling and 2,426 in currency. On the San Paulo for the 46th and 47th weeks there have again been small declines both in sterling and currency, but the aggregate revenue for the year to date are higher by £154,393, although currency receipts are less by 2,301 contos.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
Buenos Ayres & Pacific* ...	22nd	1,310	— 6	24,942	— 1,822
Buenos Ayres Great Southern*	22nd	2,276	— 90	42,052	— 1,782
Buenos Ayres Western* ...	22nd	796	— 12	14,476	— 1,335
Central Argentine*	22nd	1,465	— 309	30,571	— 11,083
		£	£	£	£
Canadian Pacific	48th	1,043,200	+ 92,000	30,926,000	+3,416,000
Bombay, Baroda & Central India	34th	303,225	— 3,150	6,415,200	+ 684,750

* Traffic returns in thousands of pesos.

Central Uruguay traffics for the 22 weeks of the financial year show an increase of £43,075, with a fall, however, in currency earnings.

* * * *

Machine Tool Capacity Pool

Valuable work is being performed by the area boards which have been established in about a dozen districts by the Ministry of Supply. The main object of these organisations is to make sure that no machine tool should be out of use when there is work for it to do. An example of the working of these boards is provided by the London and South Eastern Area Board, the activities of which relate to a district in which there is large population. On the board sit three representatives of employers, three of workers, and a spokesman drawn from each of the three Service Departments. Representatives of the Ministry of Labour, the Board of Trade, and of the Ministries of Supply and of Aircraft Production are also members of the board. There are a number of engineering undertakings in the district, and in order to facilitate its task nine clearing centres have been set up. These local centres serve an important purpose by reason of their close contact with conditions in their immediate vicinity. The board examines the result of the census of machine tools which is taken at regular intervals and takes action to ensure that spare capacity of tools and premises is put to productive purposes, that labour is used in the most efficient and economic manner and also to make alternative arrangements when premises suffer damage.

* * * *

Conversion of Reichsbahn Preferred Shares

Redemption on July 1, 1941, of the 7 per cent. preferred shares of the Deutsche Reichsbahn was announced in the *Deutscher Reichsanzeiger* of September 14. Since these shares are now redeemable at 120 holders are offered, as an alternative to cash payment, the conversion of their shares into new 4 per cent. 25-year Reichsbahn bonds, which they will receive on July 1, 1941, at the rate of 120 Reichsmarks of bonds for each 100 Reichsmarks of shares, plus a cash payment of 7½ per cent. which will include the dividend for 1940. Those desiring cash payment will receive 120 per cent. of the nominal value of their shares, plus the usual interim dividend on January 2, 1941, and the final dividend for 1940 on July 1, 1941, but will not be entitled to a dividend for 1941. The new bonds will bear interest from October 1, 1940, and will not be redeemable before October 1, 1945. Since about RM. 1,000,000,000 nominal value of the present preferred shares are outstanding, and since it is presumed that most holders will choose the conversion offer, the redemption will require about RM. 1,200,000,000 of the new loan. The total amount of the loan, however, is fixed at the higher figure of RM. 1,500,000,000, and the amount not required for the conversion will be offered for public subscription at 99¾ per cent. The conversion is expected to result in annual savings of about RM. 22,000,000 for the Reichsbahn, since the annual service requirements will be reduced from about RM. 70,000,000 on the present 7 per cent. preferred shares to probably RM. 48,000,000 on the amount of 4 per cent. bonds to be issued in exchange.

* * * *

The Brazilian Railway Congress

At the third Brazilian Railway Congress, held in October at Bello Horizonte, accompanied by an exhibition of material, there was no want of papers to interest the participants. The last two numbers of the official Bulletin of the Brazilian Railway Engineering Association which have reached us, covering July and August, 1940, each contains six papers; another containing five more is promised. Subjects dealt with include layout of workshops, design of locomotives, rail welding, overhauling vacuum brake gear and fitting vacuum brakes to vehicles previously equipped with air brakes, selective telephone systems, housing of railwaymen, compilation of statistics, economics and transport co-ordination; there are also official reports on the brake question and other matters. Several of the papers are illustrated but the reproductions are not very clear in some cases; the map illustrating the telephone dispatching system on the Central Railway is unreadable; Brazil is not the only country in which too little attention is paid to this point in technical publications. It is clear that the association is exercising considerable influence, and there is certainly no lack of scope for it in such a large country.

* * * *

Maximum Speeds on Narrow Gauge Tracks

The news that one of the diesel railcars recently built by the Vulcan Foundry Limited for the New Zealand Government Railways has attained on test a maximum speed of 76 m.p.h. prompts a review of the highest recorded maxima over gauges narrower than standard. Apparently the record is held by a De Dietrich diesel unit which up to the war worked the Etoile du Sud service between Tunis and Gabès; when under test this attained 78 m.p.h., and in daily service was booked to cover the 40 miles from Graika to Aouimet in 46 min., at 52 m.p.h. start-to-stop—in all probability the fastest schedule ever tabled on the 3 ft. 6 in. gauge. In Java booked speeds of between 45 and 50 m.p.h., and maxima up to 60 m.p.h., are common over the 3 ft. 6 in. gauge with the steam-hauled express trains of that island, and in Japan speeds on the same gauge are but little inferior to this. The highest speed on record over the 3 ft. 6 in. gauge railways of South Africa was attained with one of the "16E" class Pacifics, over the Karroo section of the main line from Capetown to Johannesburg, and was 70 m.p.h. A remarkable speed experiment over a track of considerably narrower gauge was made some years ago on the 15-in. gauge Romney, Hythe & Dymchurch Railway, when it is claimed that a tractor fitted with a Rolls-Royce motorcar engine hauled a few of the very light coaches used on this line at a maximum speed on the level of 60½ m.p.h.—almost certainly a record for a gauge only one-quarter of the standard width.

Suburban Coaching Stock

The term " suburban " as applied to railways is very elastic. In some cases it describes traffic operating as far afield from a populous centre as 50 miles, despite the fact that the locality may be extremely rural, with few regular daily passengers and only small local traffic inducements. Sometimes in present conditions, however, districts well beyond the normal " outer suburban " limit tend to have a heavy traffic of their own, derived from persons who have voluntarily sought places of residence further from their business than they would contemplate in peacetime. One of the problems to be solved in this connection is the type of rolling stock to be used. Corridor coaches may be regarded as somewhat of a luxury, and as in large measure defeating the purpose of carrying as many people as possible for a given length and weight of train. On the other hand, where journeys of from 60 to 90 minutes, including stops, are made, there is a fairly good reason for the demand often put forward for facilities that cannot for obvious reasons be provided in the non-corridor vehicles. The position has been aggravated by the present greatly increased number of passengers travelling daily, many of them to and from the places to which they have been evacuated.

* * * *

Coded Track Circuits on the Pennsylvania

An interesting installation of the coded track circuit, one of the most modern developments in signalling, is to be found on the Pennsylvania Railroad between Bradford, Ohio, and Anoka Junction, Indiana, and is described in detail in our contemporary *Railway Signaling* for August. Track circuits up to 11,000 ft. in length are being satisfactorily operated on this system by primary battery, where an outside power supply is not available, and enable 3-aspect signalling, in this case using position lights, the P.RR. standard, with approach lighting and route locking without line wires, with their risk of derangement in bad weather. Special advantages are claimed for the coded system, such as security against irregular interference and better shunting qualities, but there is, of course, more apparatus required than with the earlier forms of equipment and time must show whether it is destined to supersede them to any great extent. Maintenance and renewal costs must necessarily play a part in the question, which is not one of technical merits alone.

* * * *

Reconditioning Old Engines

At a time when the construction of new locomotives is a matter of difficulty, the possibility of modernising old engines is one worthy of more than usual consideration. There are many designs in which saturated steam is still used, sometimes in a small, and sometimes in a fairly large boiler, the equipment of which with superheaters would be a matter of no very great difficulty, and might well be found justifiable in the case of what in normal conditions would be regarded as an obsolescent machine, shortly due for replacement. Larger boilers, too, might be installed in some instances, where the frames are sufficiently strong to carry the increased stresses, as in many instances we have in mind they would be. With the development of welding, of course, the strengthening of frames may be much simpler now than in former days. Again, a passenger or mixed traffic locomotive which perhaps might be too small to serve a useful purpose as such, rebuilt with a superheater and perhaps new and improved cylinders and valves, might be worth a further modification from, say, the 4-4-0 type to the 2-6-0 type, with, of course, superheating and possibly an improved front end. In any event, there are hundreds, if not thousands of locomotives in this country of which the performance could be improved and probably the maintenance costs reduced by improving the front end arrangements, at comparatively small cost. It is to be understood that such suggestions as the forcgoing are applicable mainly to the present time, although if manufacturing capacity were normal they would probably not be worth while.

Shunting Operations in the Blackout

ONE of the problems facing railway companies created by the prevailing conditions is that of conducting operations during the blackout period. In this connection, work at locomotive sheds in handling the engines and in marshalling and similar yards, where a large and increasing volume of freight train traffic has to be dealt with continuously, presents a special difficulty of its own. The numbers of vehicles to be sorted out and trains to be re-formed during the lengthy spells of darkness have already assumed proportions very greatly in excess of those ruling in peacetime, and are still advancing as the need extends for transporting ever greater quantities of materials of national importance. In present circumstances freight traffic is largely of a preferential nature, and work in the yards must be undertaken more than ever on what may be termed a non-stop schedule of operations; hence there arises the question of motive power for shunting purposes as a corollary to the wider problem. Steam locomotives of suitable size and design are used in British railway sorting yards to a preponderating extent, and have proved efficient in the circumstances that prevail ; they possess, however, the disadvantage common to all such engines, namely, the difficulty of shielding the light from the firebox when the firedoor is opened. The facts that the footplate is entirely roofed over and that side curtains have been provided assist in reducing the risk, but even so a certain amount of light in the form of intermittent beams is shown, and of course the cab windows can be obscured only partly.

Then again, when cleaning fires at the sheds the heaps of live ashes thrown alongside the tracks form small beacons of light which can be seen readily from the air, and exception to this practice may be taken as an infringement of the blackout regulations. Remedies for such things as these may cause delays in the handling of the locomotives and interfere with their availability, in turn causing interruption in the continuity of operations in the yards for the reason that shunters without engine power at their disposal are of little avail. Under such conditions the diesel type of locomotive would appear to offer considerable advantages, as with it there is no question of light showing from the driver's cab. The early types of such locomotives were considered unsuitable for shunting operations, especially on a large scale, due to their poor starting and accelerative powers, but this drawback has been entirely overcome and the modern diesel offers a mobile form of traction and has proved itself highly efficient in connection with intricate shunting operations. One may ask whether the extensive introduction in Germany within recent years of diesel *Kleinlokomotiven* for shunting has had as one of its objects the availability of a motive power which shows no light to raiding aircraft.

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Buenos Ayres Great Southern Railway

THE full report of the directors of the Buenos Ayres Great Southern Railway Co. Ltd. shows that the results of working the railway, including the lines under agreement, for the year ended June 30, 1940, were gross receipts of 120,197,367 pesos (£10,493,421) compared with 120,446,687 pesos (£10,515,187); working expenses, despite rising costs of fuel and materials, were 88,602,228 pesos (£7,735,115) compared with 89,888,457 pesos (£7,847,405). Net receipts, therefore, showed an improvement at 31,595,139 pesos (£2,758,306) in comparison with 30,558,230 pesos (£2,667,782) for the previous year. Deducting exchange differences which this time were equal to £1,086,661 against £1,240,868 of the previous year, there was a balance of £1,671,645 (against £1,426,914). The war disturbances to commerce affected receipts and it is particularly satisfactory, therefore, that notwithstanding higher costs of fuel and all materials expenditure was so substantially reduced. The ratio of expenses to receipts improved from 74·63 to 73·71 per cent. Had the same procedure been adopted as in the previous year when the net expenditure on renewals, fire insurance, and claims and casualties was charged to the respective reserve funds, the balance would have been

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£212,889 higher. In the year under review the net expenditure on these items has been charged direct to working expenses.

	1938-39	1939-40
Number of passengers	57,602,365	57,065,760
Tons of goods	7,468,923	7,766,407
Train-kilometres	26,247,000	25,161,000
Operating ratio, per cent.	74·63	73·71
	£	£
Passenger receipts	2,755,053	2,660,101
Goods receipts	4,996,960	5,053,321
Gross receipts	10,515,187	10,493,421
Working expenses	7,847,405	7,735,115
Net receipts	2,667,782	2,758,306

After providing for all fixed charges there is a credit balance on net revenue account of £161,103. The directors have decided to transfer £100,000 to the general reserve fund and to carry forward £61,103. In the previous year, in addition to charging to reserve funds the expenses previously mentioned, £50,000 was transferred to net revenue account from the general reserve fund. The rate for the company's remittances for financial services remained at 16; for stores and materials it was reducd to 15 as from October 17, 1939. These rates compare with the par rate of 11·45 pesos to the pound sterling.

* * * *

Locomotive Water Supply

A BY-PRODUCT of modern American operating conditions, with their steady increase in scheduled speeds and the length of locomotive runs, has been the development of locomotive tenders to a size in which water capacities up to 20,000 U.S. gallons are common. This in its turn has led to a reduction in the facilities for taking water; several railways, indeed, report that from 20 to 25 per cent. of their water stations have been " retired " during the past 20 years. This wholesale closing down of water facilities, however, is not without its risks, especially in bad weather conditions or in the event of a failure of equipment or supply at any of the regular watering stations. Another problem created by these enormous tender capacities is that of filling the tenders without undue delay ; in some towns where there are numerous level crossings, blockage of highway traffic while the engines of lengthy through fast freight trains are taking water has become acute, and certain railways have in consequence had to shift their watering facilities to locations well away from such towns in order to overcome this difficulty. At the recent convention of the Bridge and Building Association, a committee which was concerned with the general question of water supply considered that the whole matter deserved closer study. It recommended that as far as possible coaling (which on many lines in the U.S.A. takes place on the main line from overhead coaling stages during the course of a locomotive's through run) and watering should be done simultaneously. Attention was also recommended to the design of pumping equipment, storage capacity, and to the rate of delivery, so that the time occupied in filling tender tanks may be reduced to a minimum.

* * * *

Argentine Railways Appeal to the Government

A DEPUTATION consisting of the Chairmen of the local boards of the Central Argentine, B.A.G.S., B.A.W., B.A.P., Entre Rios and Argentine N.E., and Santa Fé Provincial Railways, together with the legal representatives of the Rosario-Puerto Belgrano Railway and the Compañia General de Ferrocarriles en la Provincia de Buenos Aires, called upon the Vice-President of the Republic, Dr. Ramón S. Castillo, on October 1, to acquaint him with the situation of these companies, as a result of the decline in their receipts and the increase in their working expenses. They pointed out to Dr. Castillo that, should these adverse factors persist, the railways would have no alternative but to curtail their services still further. In order to avoid such a step, they urged the necessity for the adoption of the emergency measures which they had proposed some time ago to the Ministry of Public Works. The announcement published in the press did not specify the nature of the measures proposed, but it may be assumed that they had reference to the abolition or modification of some, at least, of the antiquated working rules, for the suppression of which the companies have been pressing for a long time past, and which, besides being a clog on efficiency, add considerably to the cost of operating. A more favourable rate of exchange for the remittance of funds to London is another concession which would bring some slight relief to the companies, the seriousness of whose financial position is clearly shown by the weekly traffic returns for all the lines, which make most depressing reading. Up to September 28, the only privately-owned Argentine railway to show any improvement in its weekly receipts over last year was the B.A.B.S.R., whose increase of $180,000 on three months working was far from impressive. All the other companies registered heavy declines; that on the Central Argentine Railway was well over $8,250,000, the B.A.P. was down by $1,640,000, and the B.A.W.R. by $846,000. The claim of the companies to such alleviation of their difficulties as it may be in the power of the Government to give them is indisputable. It should be remembered that not only have they withdrawn the petition put forward some months ago for a slight increase in the tariffs on certain classes of goods, in view of the economic situation, but have recently agreed to co-operate with the Government in its scheme for assisting the maize-growers, by reducing the tariffs on that commodity on a scale varying between 10 and 20 per cent. In view of all the circumstances, it is much to be hoped that Dr. Castillo's assurance to the companies' representatives that the matter would receive the Government's preferential attention will be followed by speedy and tangible results.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Short Loading of Wagons

25, Green Lane,
Northwood,
Middlesex
December 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Thank you for your footnote to my letter of December 2; it concedes the point I made regarding bulk in relation to weight, for whereas in your editorial note of November 22 (page 536) you claimed that " . . . it was shown that the answer to short loading of wagons is that, while the maximum weight capacity of a wagon may be 12 tons, the same wagon could be loaded to its maximum cubic capacity with a weight of about 6 cwt. . . " you no longer attempt to sustain this opinion, as you now admit that there are other factors involved. There are, and the examples you quote are excellent illustrations of my own arguments that the low efficiency of train loading and speed of movement are directly due to present methods of railway operating. The necessity for this expensive working only arises from the very methods of operating which I criticise. It is precisely because the railways spread the loading of traffic over numerous stations, instead of concentrating upon centres from which full loads to other similar centres can be made up, that it is necessary (in order to avoid the delays due to transhipping) to run wagons through to destinations with loads as low as 1 ton (even, in many cases, with half a ton) and that is one reason why wagons load so poorly.

The fact that traders tend to order small quantities (Lord Stamp's article in the current *Economic Journal* is most illuminating) also, is no excuse for extravagant working. It is, however, an added reason for the reforms I advocate. Indeed, large traders have themselves adopted the principles I recommend, largely to meet the problem of the small consignment, and the improved vehicle loading (road, rail, and steamer) which has resulted can be demonstrated.

Your examples, therefore, lend strong support to my case —they are certainly no answer to it. The only railway criticism of my paper so far has been on lines identical with your own, and I do submit, with all respect, that the nature of the criticism shows little evidence that the problem has been adequately studied.

Yours faithfully,

FREDERICK SMITH

PUBLICATIONS RECEIVED

Locomotive Valves and Valve Gears. By Chas. S. Lake and A. Reidinger. London: Percival Marshall & Co. Ltd., 60, Kingsway, W.C.2. 8 in. × 5¼ in. 142 pp. Illustrated. Stiff paper covers. Price 5s. net.—In this small treatise the authors have approached their subject in a practical and straightforward manner, thus succeeding in giving much information in few pages. In the preface attention is rightly drawn to the importance of a well-designed valve motion, for the performance of modern locomotives, as to both high-speed running and power output, is in a great measure due to the care now given to the proportioning of the steam and exhaust ports, valve sizes, and the construction and general design of the actuating motion.

Beginning with some notes on the rudimentary principles of steam distribution in the cylinders, the authors proceed to a description of the many types of slide valves that have at various times attained a certain vogue in practice. It is pointed out that the flat valve allowed of the discharge of trapped water, but that is correct only when it is fitted in a buckle, and Fig. 8 shows a valve spindle which is not of the buckle type. Fig. 16 shows more correctly the common locomotive valve spindle with the buckle embracing the exhaust cavity of the valve.

In Chapter III we are told that piston valves "are complicated and therefore expensive," compared, presumably, with slide valves. No doubt this is true, but to what extent is it a fault, and how do they compare with other types of valves, say the Cossart in this respect? Actually, piston valves can be very simple, and, as practically all the work of manufacture can be done in a lathe, with modern machining methods their production is relatively simple. It is hardly correct to say that "the purpose of having the piston valve working inside a liner is to protect the main cylinder casting from wear." The truth is that a piston valve must work in a liner on account of the bridge pieces required in the cylindrical ports to support the valve packing rings. They could not be formed in the cylinder casting, and, moreover, must be accurately milled to size.

Most of the various forms of link motion gears which have been or are used are described, and, in fact the only gears that come to mind which have escaped attention are the Deeley, used to a small extent at one time on the Midland, and the Bryce-Douglas, tried some years ago by Drummond on the Caledonian. Modern gears are treated in Chapters VI, VII, VIII, and Chapter IX is devoted to a general discussion on limiting and regulating cut-off. The advantages of using a limited full-gear cut-off are not enlarged upon. Under the sub-heading, "Long Travel Valve and Gear," a maximum travel of 13 in. is mentioned. This must, however, not be taken too seriously, as about 9 in. is the maximum for satisfactory working, while even for large engines 7 to 8 in. is usual.

It is probable that the concluding section of the book, which deals with poppet valve gears, will be that appealing most to the majority of readers, for here we are on more or less new ground, and further it is quite evident that the authors are remarkably well informed on the subject. The different gears described and illustrated are treated exhaustively.

The book closes with an academic discussion on the distribution of steam in locomotive cylinders which, if accepted, certainly shows that some recent proposals for valve gears have rather serious shortcomings. On the other hand, it may be argued that any attempt to adjust accurately the period of, say, compression for any given rate of admission, in order to improve cylinder performance is only a compromise, because of the varying speeds at which any cut-off may be employed, and moreover it presupposes that both valves and pistons are really tight. Even so, better to strive for the ideal if we know what this is, than to rest content with what we feel can be or should be improved. This little book, with excellent and well selected illustrations, will soon be found in many shelves, humble and otherwise, and is worthy of a more businesslike and better cover.—E. C. P.

THE SCRAP HEAP

The Minister of Transport on :—

Himself: "I lead a Jekyll and Hyde life. Sometimes I am myself and sometimes I am the Minister of Transport. I have a lot of keepers."

Passengers: "It proves the hardihood of the British race that there are still so many."

Wagons: "The convenient storehouses of the trader. They arrive in the summer so that he can plant flowers in them for the next spring."

Demurrage: "Instead of just fining people I thought we might put some in prison, but I was advised that no less than five Ministers would have to go to gaol."

Air Attack: "The L.P.T.B. has been hit so often it is now news on London when it is not hit. It is a tremendous fight against a tremendous attack."

Southern Railway: "It is difficult to drop a bomb around the south of London without hitting the Southern Railway. It is the second Battle of Waterloo and the troops are British railwaymen. The victory in the second Battle will be as great as in the first."—*Lt.-Colonel J. T. C. Moore-Brabazon at Institute of Transport lunch on December 4.*

When the Taff Vale Railway was opened in 1841 the drivers of the first locomotives, eight in number, all came from Newcastle-on-Tyne, and when 24 years later the first locally-owned steamer, the *Llandaff*, entered the port, curiously enough she, too, came from Newcastle.—*From the "Western Mail."*

* * *

SOUVENIRS OF PIONEER RAILWAY

The lantern shown in the accompanying picture was in use on the Champlain & St. Lawrence Railroad, the first passenger line in Canada, and now part of the Canadian National Railways; its final service was for signalling at Barrington, near Hemmingford, Quebec, which in the early days was called Johnston. When Mr. John Hebert retired from a long career as an engine driver spanning the period from wood burner to automatic stoker, he carried away the lantern as a souvenir, as well as a brass torch (also shown in the picture) used in the Grand Trunk period. These articles passed into the possession of his son, Mr. D. Hebert, who is shown holding them. He is also a retired engine driver, and has now passed the relics to the Canadian National Railways historical collection. The Heberts, father and son, between them were employed 97 years by the Canadian National and predecessor companies.

Lantern and brass torch used on the pioneer Champlain & St. Lawrence Railroad—the first passenger line in Canada—and now in the Canadian National Railways historical collection

XUM

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

ARGENTINA

Experiments with Maize as Fuel

In order to determine if maize on the cob could be used successfully as a substitute for coal on locomotives, experiments were recently carried out under the direction of a committee composed of representatives of the National Railway Board, the Committee on Combustibles, and the various railways, but the results obtained were so unsatisfactory that the use of maize alone for this purpose was not recommended. Experiments in the mixing of maize and coal in varying proportions showed that a mixture of 60 per cent. of Welsh coal and 40 per cent. of maize gave the best results. The practical demonstrations were followed by laboratory tests, which showed that maize on the cob possessed a value of 3,800 calories, as compared with 8,265 calories in the case of Welsh coal, a thermic relativity of 2·175 to one in favour of coal. It was also found that the cost of handling and firing the mixed fuel was considerably higher than in the case of coal only. In view of the extra labour involved it was considered that the small economy, estimated at $5·00 per ton, which would accrue from the use of maize fuel, would not justify its employment for this purpose.

National Fuel Board Appointed

Despite the adverse reports on the results of the maize fuel tests on locomotives, the Argentine Government has decided that as much as possible of the surplus crop, estimated at six million tons, should be used as fuel, this being considered the most economical method of disposing of it, and a Decree to this effect was issued on October 3. The Decree stated that at present there was a shortage of coal in the country equivalent to 100,000 tons a month less than the quantity required for industrial purposes. This deficiency had to be made good, and maize was the most convenient substitute.

The control and distribution of fuel have been vested in the new National Fuel Board, which will be presided over by the Minister of Agriculture or his delegate, the Director of Supply, Industry, and Commerce of the same Ministry, a representative of the Ministry of War and the Ministry of Finance, and a representative of the National Oilfields. The functions of the board are defined as follow :—

(*a*) To distribute the available fuel stocks in such a manner that any deficiencies can be filled by maize.

(*b*) To advise the Government as to the quantities of fuel which should be imported, in accordance with the country's requirements and the exchange available.

(*c*) To establish the conditions under which maize is to be sold as fuel or industrial raw material.

(*d*) To superintend the general application of the Decree.

The control of the distribution of fuel will be made through the State oilfields, which will also control the use of maize as fuel. The National Grain Board is to act in close co-operation with the Grain Regulating Board, the State Oilfields administration and the Exchange Control Bureau, the latter in connection with the issue of permits for fuel imports. Maximum fuel prices will be fixed as soon as the committee's report has been received.

B.A. Transport Corporation Lawsuit

It is reported that the trustees for the debenture holders in the C.H.A.D.O.P.Y.F. Company propose to bring a lawsuit against the Buenos Aires Transport Corporation for the payment of over 2,000,000 pesos, which, they claim, the corporation had undertaken to pay to the company to enable it to meet its obligations, but which was never handed over. [As reported in these columns in our issue of November 8, the company has suspended interest payment on its debentures.—ED., *R.G.*] The number of debenture holders is estimated at 30,000, most of them small shareholders. The plaintiffs reserve the right to take legal action against the C.H.A.D.O.P.Y.F. when deemed opportune.

SOUTH AFRICA

Tourist Traffic Maintained

In the annual report of the Johannesburg Publicity Association for the year 1939, it is stated that a considerable and profitable travel business is still being done, and that the popular impression of a severely damaged travel business cannot be sustained. The sharp fall in traffic from overseas countries has been partly redressed by a rise in traffic from African territories. This statement is borne out by the fact that, as compared with the record of 39,922 visitors to the Union in 1938, the total in 1939 fell only to 34,659. For the half-year to June 30, 1940, the figure was 16,319.

Many South Africans who would have gone overseas are now compelled to take their holidays in this country and the adjacent territories. Moreover, the average length of stay in the Union of visitors from certain African territories is proving greater than that of visitors who come here in normal years from Europe and America.

The Union is not, therefore, on balance, suffering financial loss as a result of these developments since in pre-war years the monetary weight of outward traffic from South Africa has always been greater than that of inward traffic to South Africa from oversea.

With the European inhabitants of African territories compelled to look towards the Union for their vacations and for recuperation, for the care and education of their children, and for goods and services which they formerly secured from Europe, the association looks forward to a new and fruitful era for Johannesburg and the rest of the Union.

CANADA

Attempted Train-wrecking

An unsuccessful attempt to wreck a Canadian National Railways passenger train *en route* from Prince Albert to Winnipeg is being investigated by the Royal Canadian Mounted Police and Railway Police. The train crew reported discovering sleepers laid across the track at two points 12 miles north of Neepawa, Manitoba, and 115 miles west of Winnipeg, about 10.30 a.m. on Saturday, October 19. The sleepers had been taken out of the track but were discovered in time to stop the train.

UNITED STATES

Wendell Willkie's Special Train

For his 7,200-mile tour of 18 Western States as Republican nominee in the recent presidential election, Mr. Wendell Willkie used a 12-car special train. For the 50 representatives of the press who accompanied him on the train, a baggage car was specially fitted up as photographic dark room and equipped with radio and mimeographing facilities. A private Pullman car, with five rooms, observation, lounge, and kitchen compartments, and having a rear platform, was used by Mr. Willkie and his family. Other cars were a room and lounge car, dining car, visitors' lounge, office car, three sleeping cars for reporters, two more for representatives of the radio and telegraph companies, and a sixth for Mr. Willkie's staff.

In the course of the tour the train passed over sections of 10 different railways between September 14 and 28.

ITALY

New Private Railway Opened

On July 20 last, a new privately-owned line of railway, 51 km. in length, was opened for passenger and goods traffic, between Novara and Biella, according to the American Consulate in Turin, quoted in *Foreign Railway News*, the organ of the American Department of Commerce. Intermediate stations are at Nibbia, Casaleggio, Carpignano, Ghislarengo, and Rovasenda—where connection is made with the State Railways system—Masserano, Cossato, and Chiavazza. There are at present three steam-worked passenger trains each way daily, but they are soon to be diesel-engined. There are also two goods trains each way. Most of the outwards traffic is from the industrial Strona and Cossato valleys, and proceeds via Rovasenda and the State system to Turin. Novara is only 490 ft. above sea level, whereas Biella is nearly 1,500 ft. The owning and working company is the Societa Ferrovie Elettriche Novaresi.

ELECTRIC TRACTION SECTION

Jubilee of the City & South London Railway

The first section of the C. & S.L.R. was opened half a century ago, on December 18, 1890. Largely owing to the foresight of the first Chairman, Charles Grey Mott, electric traction was adopted and not an endless cable, as first intended, and the successful foundations were thus laid for the extensive tube services now serving London

IN 1870 the well-known civil engineer, Peter William Barlow, obtained an Act authorising the construction of a subway between the City (Monument) and Southwark (St. George's Church), a little to the west of London Bridge. This was to be 8 ft. diameter and 1,200 yd. long, and was to be worked with cable-operated cars on the same methods as those tried in the Tower Subway, opened in 1870. The failure of the Tower Subway as a railway made it impossible to raise the required capital for the City & Southwark scheme, and an Act of abandonment was obtained in 1873. Work on another subway was begun in 1876, between North and South Woolwich, but never completed, and although other similar schemes were brought forward, nothing else resulted in London for some years. Barlow's erstwhile pupil, James Henry Greathead, afterwards obtained an Act on July 28, 1884, authorising the construction of a twin tunnel subway, to be worked by an endless cable, from a point near the north end of London Bridge to the Elephant & Castle. This Act incorporated a company with the title of the City of London & Southwark Subway Company to carry out the work, Greathead was the Engineer, and Sir Benjamin Baker and Sir John Fowler were the Consultants. After the Act had been obtained, Mr. Charles Grey Mott, who had been associated as a Director with the Mersey and Severn tunnels, and had been a Director of the Great Western Railway since 1868, became Chairman.

The principal cable traction patents were being exploited in Great Britain by the Cable Tramways Corporation, and the subway company paid a considerable sum to secure the rights to use them on its line and on any extensions. The site selected for the City terminus was where King William Street crosses Arthur Street (East and West). Except where the Hibernia Wharf and Chambers were unavoidably passed under, the route intentionally ran under streets to avoid interference with private property. In consequence, the line curved sharply round on leaving the terminus and, running below Arthur Street West, approached the river under Swan Lane. This thoroughfare is so narrow that the up line tube had to be placed over the down to keep them within its width. Curving round again to reach the Borough High Street opposite the end of Denman Street at the south end of London Bridge, the route continued under Newington Causeway to the proposed Surrey side terminus at the Elephant. There was to be an intermediate station at Great Dover Street, Borough. The total distance was slightly over 1¼ miles, and the authorised capital was £300,000 in £10 shares. The route was rather too short to develop the real capacity of the line, and in 1887 an Act was secured for an extension to Stockwell, making the line just over three miles long. Early in 1886 a station at the south end of London Bridge had been suggested, but the company had no powers to make a surface station, and the old L.B. & S.C.R. declined to agree to a subway connection between its own London Bridge terminus and the tube. The proposal was therefore dropped for the time being.

Construction Work

In March, 1886, the company placed a construction contract with Edmund Gabbutt, of Liverpool, and work was begun by erecting a temporary staging behind the Old Swan Pier from which a shaft was sunk. Tunnelling began with driving the upper, or up line, tunnel southwards under the river on October 28, 1886, and this was finished on February 12. The down tunnel was begun below the up in March, 1887; it came alongside and west of the up line tunnel on the south side of the river, thus placing the two lines in a right-handed position at that point. In driving the up line tunnel northwards to King William Street the London clay was pierced, and a portion of the work had to be constructed under compressed air, until the clay was again met with.

On completion of the tunnels under the river, land was acquired for the Borough and Elephant stations, and the 25-ft. dia. lift shafts, to be used to begin the tunnelling, were sunk. The erection of temporary shafts in the streets, although allowed by the Act, was hedged with restrictions, but it was found that there was no need to use the powers.

Tractor Power

The plans so far formed for the cable working comprised an engine house at the Elephant, driving one cable at 10 m.p.h. on the City section and another at 12 m.p.h.—the route being much easier—on the Stockwell section. Construction began at the two intermediate station points, New Street (Kennington) and the Oval, as well as at the Stockwell terminus. By this time contracts had been arranged for the supply of the cable equipment, but since the promotion of the undertaking electric traction had made its appearance as a rival to cable working. Electric working was more flexible, approximating to real railway conditions, and offered the possibility of a higher average speed. The noise of cable working, which would be considerable in stations on or near curves, would also be eliminated, and shunting facilitated. The half-yearly report for August, 1888, stated that electrical force, conveyed by continuous conductors, offered the best solution of the difficulty. The first proposals received were merely general and offers were therefore invited on the basis of a specification, covering the running of a three-minute service. The half-yearly report for January, 1889, stated that after collaboration on the part of Mr. C. E. Spagnoletti (Telegraph Superintendent, G.W.R.), a contract had been placed with Mather & Platt Limited, of Salford, the electrical department of which was then under the direction of Dr. Edward Hopkinson. The contractor undertook to provide the motive power necessary to run a three-minute service from each station at a greater average speed than that then attained on the Inner Circle of the Metropolitan Railway, and also guaranteed for a period of two years that the cost per train-mile would be at a considerably lower rate than if steam locomotives were used. Construction of the line did not progress so quickly as had been hoped, and difficulties were encountered near Stockwell with wet gravel, necessitating again working under compressed air. In 1889 a start was made with the boiler house at the power station and the rails were laid from the City to the Borough. In December, 1889, experimental running was begun with a locomotive and two carriages over the completed track, using a small temporary generating set at the Borough station, and one tunnel was through to Stockwell by the beginning of 1890. A second locomotive arrived in February, 1890, and on March 7, the Lord Mayor and other distinguished guests travelled from the City to the Elephant. Their return journey was delayed for an hour, as the local water company's turncock shut off the water to the boiler

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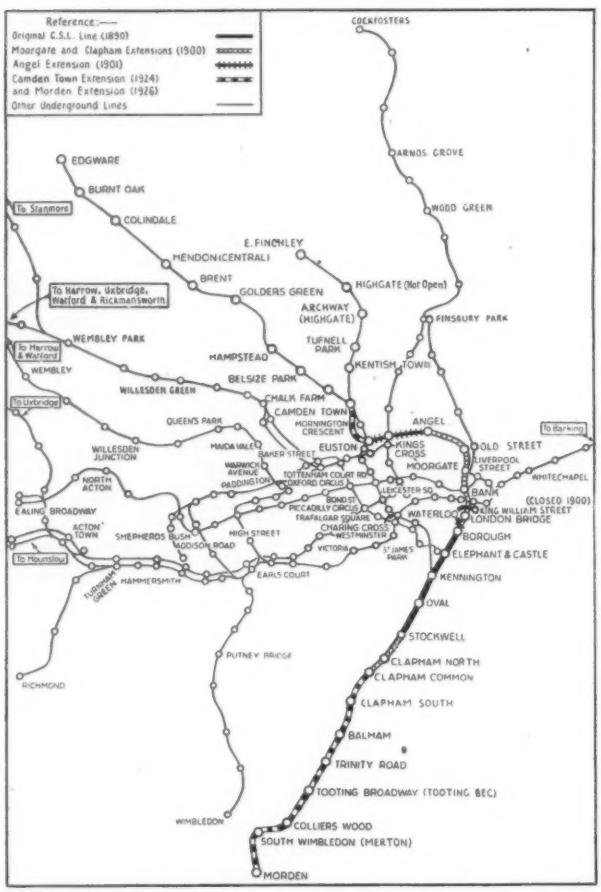
feeding the generating set and had to be appeased. An incline tunnel at Stockwell connected the station with the depot, and had a gradient of 1 in 3½. Locomotives and trains were hauled up this incline by cable and moved about in the depot by capstans, a practice which continued for some years.

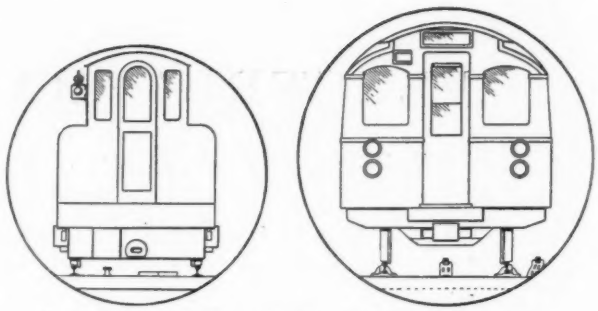
Extensions and Openings

The January, 1890, report said that as the then authorised lines stopped at Stockwell, about a mile short of the traffic centre near the "Plough" at Clapham, the directors had deposited a Bill in Parliament asking for powers to extend the line to that point, and that they proposed also to alter the name of the company to that of the City & South London Railway Company, as being more in harmony with the nature and object of the undertaking. The Bill sanctioning the change of name received the Royal Assent on July 25, 1890. Application had also been made for powers to acquire land and make a station at London Bridge (Denman Street). Greathead was able to report that the satisfactory working of the line by electricity had been placed beyond doubt by the experiments carried out by Mather & Platt on the City section of the line with one of its locomotives and the Ashbury company's carriages. By July, 1890, the date of the first report bearing the new name of the undertaking, the Clapham extension Bill had received the Royal Assent.

A formal opening ceremony was performed by the Prince of Wales (afterwards King Edward VII) on November 4, 1890. On the same day the company was granted the authority of the Board of Trade, after an inspection made by Major-General Hutchinson, with Major Cardew as electrical adviser, for conveying the public, but it was decided to have some weeks' private working before doing so, and, after one or two premature announcements, the public service began on Thursday, December 18, 1890.



Map of the City & South London Railway and its connections



Sections through the original tunnel and the tunnel as reconstructed to pass standard Underground stock

The terminal stations on the original City to Stockwell line had tunnels 26 ft. wide by 20 ft. high; at the intermediate stations each line had its own tunnel, 20 ft. wide by 16 ft. high and about 200 ft. long. At King William Street the up and down lines converged to a single line of rails in the centre of the station, with a platform on each side. This layout formed part of the original cable-working plans, no other terminal arrangement being possible without considerable complication. At Stockwell there was an island platform with a line on each side and a scissors crossing between the station and the tubes.

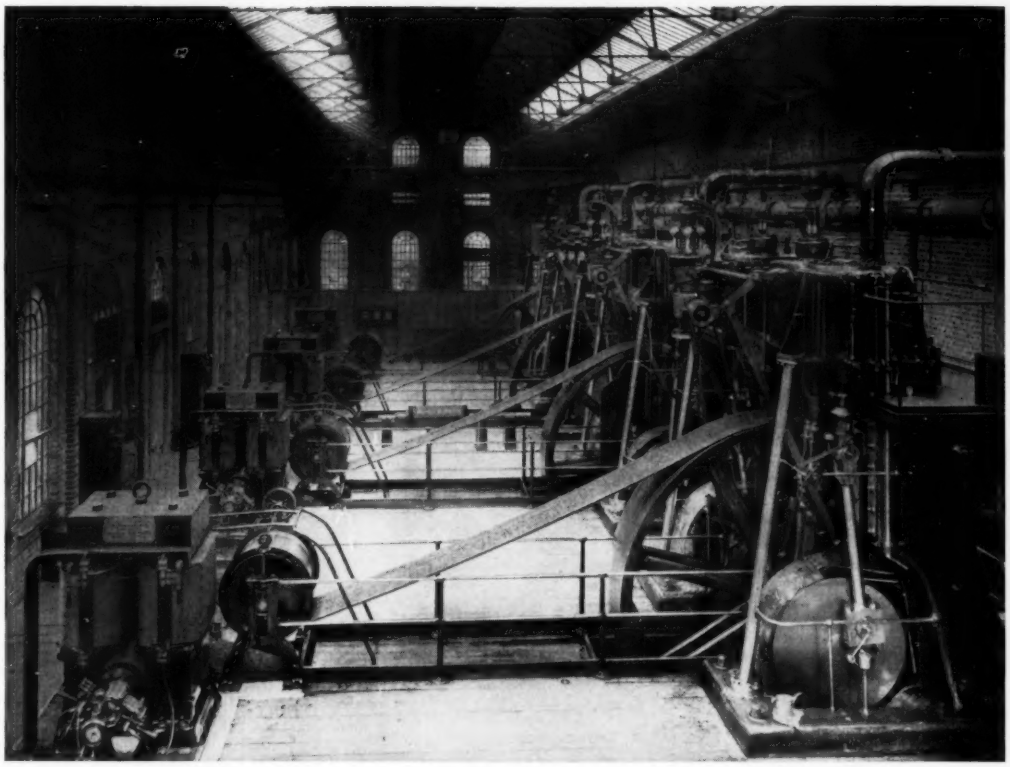
No two intermediate stations were quite alike. At the Elephant the up and down lines were on the same level, to enable a crossover siding long enough to hold two trains to be built connecting the lines north of the station. At the Borough, Kennington, and the Oval the two lines, although side by side in plan, were at different levels, the up line 9 ft. 6 in. higher than the down, to enable passengers to reach both from the lifts with the minimum of stairs or slope. At the Borough and Kennington passengers passed over the down line to reach the up, but at the Oval they passed under the up line to reach the down. A further peculiarity at the Borough was that the direction of traffic was right-handed, the down tube, which left King William Street in the normal left-handed position, running under the up at Swan Lane and passing to the right-hand side of it, after the river shaft, then recrossing under it again between the Borough and the Elephant. No explanation of why this was done now appears to be available. At the Borough the two station tunnels were level with one another in plan, but at Kennington and the Oval they were displaced with regard to one another. A universal fare of 2d. was adopted, and passengers paid their money at turnstiles. Gas lighting was used at first, there being insufficient power to provide electricity.

The Tunnels, Curves, and Gradients

The permanent way, laid to the standard gauge of 4 ft. 8½ in., comprised 60-lb. flat-bottom rails spiked to cross sleepers resting directly on the tube; ballast was dispensed with to avoid dust as much as possible. Although giving rise to a resonant noise, this track gave satisfaction. The curves were rather severe in places, but could not have been reduced without taking an entirely different route. The down line fell at 1 in 14 soon after leaving the City—on a sharp curve—to come below the up, and the latter approached the terminus at 1 in 40 and 1 in 70. Had cable working not been originally in view there is little doubt that the City station would have been placed deeper, so giving easier gradients. At most stations there was a short down grade of about 1 in 30 to assist trains in accelerating.

Electrical Equipment

The power station at Stockwell housed three—soon afterwards four—450-h.p. vertical non-condensing compound engines by John Fowler & Company, of Leeds, which had cylinders 17 in. and 27 in. dia. by 27 in. stroke, fed at 140 lb.



Interior of the power house at Stockwell, showing the four 450 h.p. engines and belt-driven generating sets

pressure from six—later eight—28-ft. by 7-ft. Lancashire boilers, and driving by belt and jockey pulley Edison-Hopkinson compound generators, capable of delivering 450 amp. at 500 volts when running at 500 r.p.m. The switchboard was of simple construction and arranged for connecting any of the generators to the four feeders, independently or in parallel. The feeders had fusible cutouts and quick-acting safety switches which threw a resistance into circuit if the current exceeded a certain value. Two feeders were coupled in parallel as far as the track at Stockwell station, whence one continued to the Oval; the two others ran through to the Borough. These cables, by Fowler-Waring, comprised 61/14 strands, lead-sheathed, taped and compounded. The third rail was divided up into sections and connected through fuse boards in the signalboxes. This rail was of special high conductivity steel of channel section, weighing 10 lb. a yd. and carried on glass insulators in the four-foot, not in the centre, owing to the central buffers on the train coming so low, but about a foot from one running rail. It had originally been intended to have an overhead conductor, but space did not allow of this. The locomotive frames being very near rail level, the conductor rail was set 1 in. below it, and wooden slopes were provided at the points to carry the collector shoes up and across. At the Stockwell scissors crossing, movable interlocked conducting bridges were installed to provide a continuous path for the shoes. The power station also contained three pumping engines for supplying the hydraulic lift mains, and twin air pumps for maintaining a reservoir at Stockwell station charged to 80 lb. pressure, for supplying the trains with air for the Westinghouse brakes. Near the power station was a locomotive and carriage shed, with lines connecting with the incline tunnel already mentioned.

Locomotives and Rolling Stock

The four-wheel electric locomotives, of which there were 14 at first, comprised a cab with end doors resembling those used with steam tram engines; they were driven by two series-wound motors with Gramme armatures, each able to develop 50 h.p. at 310 r.p.m., or 25 m.p.h. with 27-in. wheels. These armatures were mounted directly on the axles, an arrangement originally suggested by Sir William Siemens; both motors were permanently connected in series and controlled by a plain rheostat switch and reversing switch. The starting current was 150 amp. and the starting drawbar pull 2,050 lb. The average running current was 50 amp. A cast-iron flap-type collector shoe was placed at each end of the locomotive. There was no air pump for the brake, but two large reservoirs under the cab sides, sufficient for about 30 stops from full speed, were recharged after a down journey from the Stockwell reservoir. The train pipe was carried along the tops of the locomotives and carriages. One locomotive provided for the first trials on the City section had geared motors, but proving extremely noisy and difficult to haul if out of order, was kept for emergency work only. The locomotives were originally painted a red-brown, but very soon a handsome yellow livery was adopted.

Thirty bogie carriages of the tramcar type, with longitudinal upholstered seats for 32 persons, were provided by the Ashbury Railway Carriage & Iron Co. Ltd. of Openshaw, Manchester. They had very narrow windows, and gained the nickname of "padded cells." The weight was about 7 tons. The bogie frames were prolonged beyond the bodies to support small guard's platforms provided with collapsible gates. A train consisted of three carriages, and there were two guards who closed the end doors and attended to the gates. A loaded train weighed about 40 tons and ran at an average speed, including stops, of 11¼ m.p.h. For a few years the guards worked enamelled indicator plates, introduced in 1891, showing, through an oblong opening in the end door, the name of the next station. For many years there was no real change of design in the rolling stock save in minor constructional details.

Signalling

The signalling was carried out by Dutton & Company, of Worcester, and was of the mechanical type, but a special design of signal was necessary to meet the restricted space

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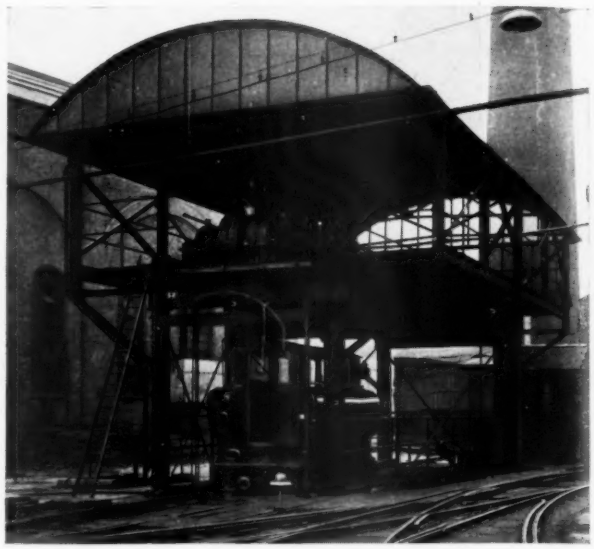
available. The Stockwell box had a 24-lever frame, that at King William Street a 9-lever one. The only intermediate box controlling both directions of traffic was at the Elephant. The lines being at different levels at the other stations, separate up and down boxes were necessary, so that the Elephant box had four block bells. Each station was protected by a home signal—there were no distants—as an emergency signal, and the block sections extended from starting signal to starting signal, or to the buffers at a terminus. C. E. Spagnoletti provided a special design of his lock-and-block apparatus, operated over two line wires, the bell rung on one polarity and the block release transmitted on the other, in each direction, with his rail deflection treadles at the ends of the sections. The block indications were " Train Arrived " (green screen) and " Train on Line Going," for section in advance, or " Train on Line Coming," for section in rear (red screens). There were two single needle speaking circuits, with connection to the power station, and telephones from box to box were soon added.

The Early Years of the Line

The new venture was a success; on the first day over 10,000 persons had passed the turnstiles at King William Street by 7 p.m. Regular travellers along the route gladly resorted to the much quicker means of getting to work and back. As already mentioned, there was a uniform fare of 2d. for any distance, paid at turnstiles. At first a five-minute service was run on week-days only, but a Sunday service, beginning about midday, was introduced on April 5, 1891. The equipment functioned on the whole extremely well and the company's report dated February, 1891, said that there was every reason to be satisfied with the use of electricity as a motive power. An average of 15,000 passengers a day travelled on the line. The fourth engine and generator, which Major Cardew had recommended, were soon obtained and more locomotives and carriages were under consideration. The principal trouble experienced was the burning out of locomotive armatures, due to some extent to the form of winding used, combined with the overload caused by the carriages weighing more than was at first arranged for; but improved winding methods overcame the troubles. The lighting of the trains was not very satisfactory, but improved power supply and voltage regulation remedied this.

Handling the heavy traffic at King William Street proved difficult, and the need of having other stations in the City was apparent. A Bill was therefore deposited for a line from the City station to the Bank and Moorgate Street and thence to the Angel, Islington, but it did not pass. In June, 1891, the fares were altered to give a 1d. fare from certain stations at certain hours of the day, and the same year saw the arrival of two new locomotives, Nos. 15 and 16, made by Siemens Bros. & Co. Ltd., with drum armatures.

The difficulties at the terminus still increasing and giving rise to much complaint, the directors announced that they had deposited a Bill to provide a London Bridge station,

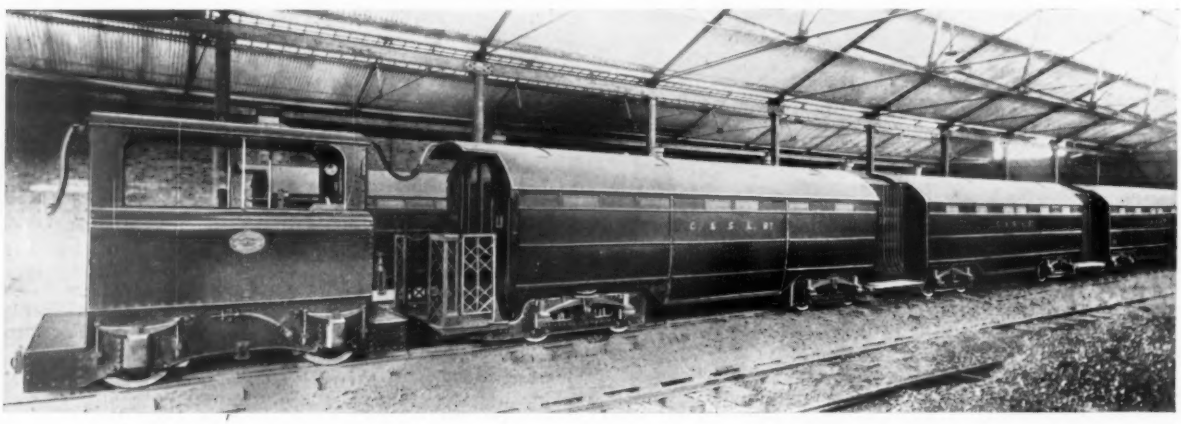


One of the four-wheel locomotives on the hydraulic lift at Stockwell depot

with two new tunnels under the river and easy inclines to a central station at the corner of Lombard Street, and a prolongation of the line to the Angel. The original intention seems to have been to make the London Bridge station on the existing line and begin the new tubes just north thereof, but the Bill was held over and did not pass until 1893, when the powers obtained sanctioned new tubes leaving the existing ones just north of the Borough station, with the London Bridge station on the new route.

The directors took no steps to use the powers to extend to Clapham, really fearing to encourage more traffic for a time. Such traffic as offered itself, however, had to be carried, and it was found that the block sections were too long to enable it to be worked without delays, especially at the City terminus. With only one line, no second train could be brought in while one was there, and this could not leave until the line was clear to the down starting signal at the Borough, some 1,330 yd. away. In February, 1892, the Board of Trade sanctioned the introduction of an up outer home signal at the Oval and a down outer home at the Borough, with the additional electric treadles required, and by February, 1894, all stations had been fully provided with outer home signals.

The oil lighting of the signals in the tunnels was not



No. 1 locomotive of the C. & S.L.R. as first constructed, together with carriages of the first delivery. The photograph was taken at Stockwell depot about the time the line was opened

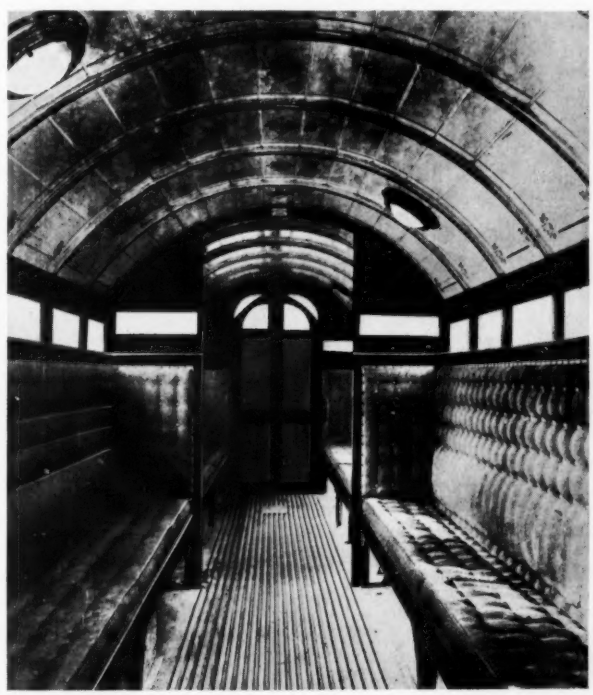
Mather & Platt locomotive No. 8, built in the early 'nineties and later rebuilt at Stockwell, with a train of the Brush coaches delivered in 1907

found satisfactory, the strong draught produced by the trains often putting them out. Gas was tried, but proved little better; it was therefore decided to adopt electric lights for all signals. Those signals which required repeating were equipped with a circuit designed by Mr. Basil Mott and the Assistant Engineer, Mr. P. V. McMahon (who became Chief Engineer in 1895, when Mr. Mott went to the Central London Railway), with which the signal lights could burn only if the position of the signal mechanism agreed with that of the lever in the signal box. A red and green luminous repeater was provided to show what the signal indication was, and acted as a pilot to prove that all lamps were burning. This arrangement became the standard, and with the exception of small alterations in constructional details, remained unaltered until superseded many years later by automatic signalling.

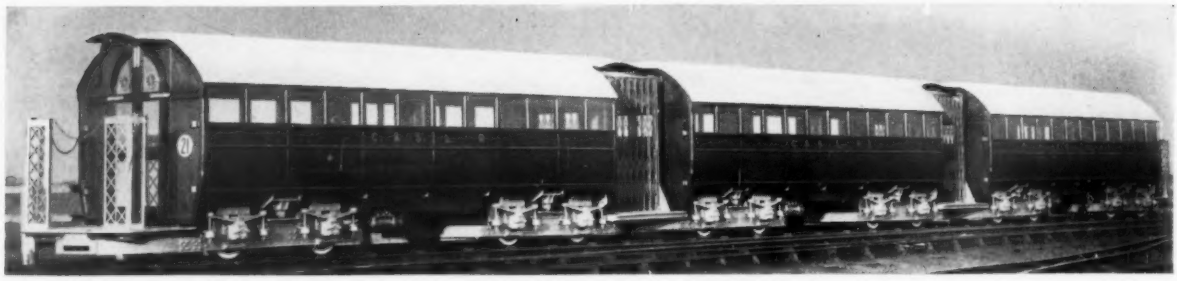
The rush hour traffic made it advisable to try and add a fourth coach to the trains, but this was possible with the King William Street layout only if the separate locomotive bringing a train in and the turnover one backing on could be got rid of. The original intention was to have the motors on the coaches, but the Board of Trade had insisted on separate locomotives when the line was planned. In 1894 an experimental motor-coach train was built and tried, and it was the intention at one time to proceed with the conversion of all the carriage stock on this plan. The matter went no further, however. The traffic difficulties arising from the single platform line in the City station led to a scheme to alter the layout to an island platform and two lines, as at Stockwell, and the work was completed by the end of 1895. The available platform length had to be shortened to allow for the scissors crossing, and there was not room for the four-coach motor train. The locomotive system therefore remained in use and was not superseded until the line was entirely rebuilt some 28 years later.

The Extensions

The rush-hour traffic continuing to grow, the fares were raised between the hours of 8 and 10 a.m. to try to effect some relief, but it was evident that the City terminus would have to be abandoned as soon as possible. In 1895 the directors decided to proceed with the powers obtained in 1893 and extend as far as Moorgate Street. Temporary shafts were sunk near the Borough station to make the new junctions, and the London Bridge station was on the site contemplated when the line was first made, but under the old tubes. The lines being right-handed at this point, the new ones adopted the same arrangement to a point between the Bank and Moorgate Street, where the up line passed over the down, bringing the tracks in the normal left-hand position at the latter station. London Bridge and the Bank stations were built on the plan afterwards common, with two station tunnels at the same level and cross passages, but the direc-



Interior of one of the original "padded cell" coaches



Train of three of the "improved padded cell" coaches with slightly deeper windows, delivered at various times up to 1901

tion of running was the reverse of the normal, and this still obtains today. Electric lifts were adopted for the new stations, and the running tunnels were 11 ft. 6 in. dia. with the idea of improving the ventilation. Apparently no advantage accrued, for this size was only used as far as Moorgate Street. The powers to make the Clapham extension, obtained before the line was opened, had not been used, from a fear of adding to the rush-hour troubles, but in 1896 it was decided to proceed. The intermediate station at Clapham Road (now Clapham North) and the terminus at Clapham Common had island platforms in a 30-ft. dia. shield-driven tunnel, the largest size made on that system up to that date. Before this work was started, J. H. Greathead, who had been the practical initiator of the shield system, had died at Streatham on October 21, 1896. The last day of the King William Street terminus was February 24, 1900; on the next day, the trains began running over the new lines from the Borough to Moorgate Street. Stockwell remained the southern terminus until June 3, 1900, when the extension to Clapham was opened. It was then possible to run four-coach trains. The old turnstile system was given up when the Moorgate extension was opened, and the customary ticket system, with graduated fares, introduced.

Later Locomotives and Equipment

Experience with the early locomotives led Mr. McMahon to conduct a series of tests on three engines; No. 12, one of the original Mather & Platt engines; No. 15, supplied by Siemens Brothers & Co.; and No. 17, made by the company at Stockwell, each with certain differing characteristics. These trials were followed by the conversion of No. 3 engine to a series-parallel system of control, with field-shunting arrangement, and the building of three locomotives, Nos. 18, 19, and 20, by Crompton & Co., the Electric Construction Company, and the Thames Ironworks, respectively. These were delivered in 1897 and 1898; in 1899 the company built two more, Nos. 21 and 22, at Stockwell. On the basis of the experience obtained, specifications were drawn up and 10 engines obtained from Crompton & Co. in 1899, ready for the extensions. The same firm supplied 10 more in 1900 and 10 more in 1901. No. 36 is to be seen in the concourse of Moorgate Street (Metropolitan Line) station today. The general design was in appearance not very different from the original type. In later years many of the Mather & Platt engines were rebuilt at Stockwell, and provided with the series-parallel control.

For more economical working at quiet hours, the company installed a high-speed Willans-Siemens generating set in 1895, and a condensing plant was added in 1896, but it was seen that the old power station and the two-wire system of feeding the tracks would not be satisfactory in future, and a new generating station was designed and put in hand ready for the Clapham and Moorgate extensions, with arrangements to suit the Angel extension which was opened on November 17, 1901, with intermediate stations at Old Street and City Road (closed since August 9, 1922). A novel distribution system was adopted, being a three-wire d.c. system, with 1,000 volts between the conductor rails of the up and down lines, the running rails being to earth midway between. Each terminal station was on one side only of the system to avoid complications at crossings. There was a break in the conductor rail approaching the station where the trains passed from the positive to the negative side and the reverse. Substations at London Bridge and the Angel were fed on a 5-wire system with 2,000 volts across the outers, using balancers and boosters on the Highfield system, and accumulator batteries as standby and load assisters. This system gave entire satisfaction and was designed by Mr. McMahon. The new power station had 14 Davey Paxman boilers working at 160 lb. pressure, feeding several engines, of which the principal were two compound Corliss engines by Cole, Marchent & Morley, with cylinders 24 in. and 48 in. dia. by 48 in. stroke and built-up platework flywheels weighing 40 tons and 24 ft. in dia. driving 800 kW. compound generators. There were also four Willans high-speed engines, driving machines of varying capacities, and, when the Angel extension was opened, a Ferranti high-speed set was put in. The total power of the station was 3,250 kW. The original power-house was converted into a repair shop.

Additions to the original stock of 30 carriages were made at various times up to 1901, bringing the total up to 124 at the time of the Angel extension; eight more coaches were obtained in 1902. All these were of generally similar design, but when the extension to Euston was opened, on May 12, 1907, the Brush Company provided some 30 all-steel vehicles. Five-car trains were introduced about 1906. In order to bring stock to the surface at Stockwell without having to use the steep incline tunnel, a hydraulic lift was installed and brought into use in 1906; it could take one coach or locomotive at a time.

Miscellaneous Notes

The general offices of the line were transferred from King William Street to Moorgate Street in 1900. In 1899 an agreement had been concluded with the Great Northern & City Railway for a joint station at Old Street, which became fully effective when that line was opened on February 14, 1904. In the year 1902 a Bill was independently promoted for a Euston & Islington Railway; it failed to pass, but in the next year, with the backing of the C. & S.L.R., it did so. In 1906 a subway connection was opened with the Baker Street & Waterloo Railway at the Elephant.

The Euston extension had two stations, Kings Cross for St. Pancras, and Euston. The lifts at Kings Cross brought passengers right down to platform level. At Euston there was a subway to the L.N.W.R. station and to the Charing Cross, Euston & Hampstead tube line. This extension was formally opened on May 11, 1907, by the Chairman of the L.C.C., Sir Percy Harris, and to the public on the next day.

About the time the Moorgate extension was opened, the company began installing two valuable improvements, afterwards adopted on all the London tubes, by fixing lights in the tunnels at 50-ft. intervals, which a signalman could switch on if a train was an unusually long time in section, and bare conducting wires from station to station, with telephone sets on the locomotives, enabling a driver to communicate with the signalman in advance or in rear. The accumulator battery arrangements at the substations ensured the tunnel lights being available under all circumstances.

The C. & S.L.R. was remarkably free from accidents. Soon after it was opened there was a case of a passenger, who had been invited by a guard, for a consideration, to ride on the front carriage platform and see the locomotive at work, falling into the tunnel and being fatally injured. Riding on the front and rear platforms was, of course, strictly prohibited.

There was also one or two mishaps with the hydraulic lifts, due to piping bursting, and one accident with an electric lift, due to a defect. In no case were the consequences very grave. Only one train accident, properly so called, appears to have been the subject of official inquiry. On September 26, 1900, a train broke down between London Bridge and the Bank, and the following one ran into it. The report blamed the driver of the second train for passing the Bank outer home at danger.

Merger with London Underground

Faced with the necessity of providing much better facilities and new equipment, the board, in 1913, negotiated an arrangement whereby the railway passed under the financial control of the Underground Electric Railways Co. of London Ltd., 99 per cent. of the ordinary stock being transferred. The principal effect of the change, as far as the public was concerned, was the introduction of non-stop trains, which ran through such stations as Clapham Road, Kensington, Borough, and City Road. A Bill was then promoted and passed for enlarging the tunnels to enable standard-size Underground trains to run over the line, and another Bill, promoted by the London Electric Railway, was passed for the construction of a connecting line from Euston to the Hampstead and Highgate line at Camden Town. Nothing much but preliminary planning had been done when the war of 1914 stopped the scheme. In the next year the Stockwell power station was closed and the line fed from the Underground Lots Road station, through substations at Stockwell, Elephant, Old Street, and Euston (joint with the Hampstead line); the ones opened at London Bridge and Angel in 1900 and 1901 were then closed. The conductor voltage was raised from 500 to 550. To improve the running during the rush hours, track circuit automatic signalling was put in after the war to replace the original mechanical signalling and Spagnoletti block as non-stop trains were often pulled up, or nearly so, by the time lost in going through the manual signalling movements.

Reconstruction of the Line

The important work of reconstructing the line to modern standards was not begun until the autumn of 1922, under the Trade Facilities Act of 1921, which authorised the issue of £2,700,000 of 4½ per cent. special debenture stock. Much discussion took place about closing the line altogether during the work, but it was decided to close only the Euston to Moorgate Street section and keep traffic running on the remainder. The chief feature of the work, and the one which made it economically possible, was that, except from the Borough junction to the Elephant, where the 10 ft. 2 in. tunnels remained, the retention and re-use of the original cast-iron lining was possible, as it was still as sound as when built. Four extra segment pieces, resembling the key pieces, were used to enable the old segments to form the new tunnel of slightly irregular shape, but effectively 11 ft. 8¼ in. diameter, the Underground standard. The rolling stock being so small, it was possible to make a shield through which the trains could pass, and about 85 per cent. of the 10-ft. 6-in. and 10-ft. 2-in. tunnels were enlarged by that means, considerably shortening the time required for the work. On the 11-ft. 6-in. tunnels from the Borough junction to Moorgate Street the work was done without a shield, and two bottom segments remained undisturbed over a considerable length. The Euston—Moorgate section was closed for the reconstruction on August 9, 1922. The remainder, as planned, was kept in service for a time, but as the result of a subsidence in Newington Causeway on November 27, 1923, the whole line was closed, and special buses in blue livery, stopping only at stations, took over the service.

In December, 1923, during the reconstruction, powers were obtained to extend the railway from Clapham to Morden. On April 20, 1924, the northern portion from Euston to Moorgate Street with the new connection to Camden Town, was opened, and the rest of the route from Moorgate to Clapham Common on December 1 of the same year. Remodelling of the stations was pursued steadily, and station buildings made brighter and more attractive, as far as local circumstances permitted. On September 13, 1926, the line was extended to Morden, with stations at Clapham South, Balham, Trinity Road (Tooting Bec), Tooting Broadway, Colliers Wood, South Wimbledon (Merton), and Morden. On the same day the connecting line from Charing Cross (Hampstead Line) through Waterloo to Kennington, with additional platforms parallel with the C. & S.L. platforms at that point and junctions beyond (authorised in April, 1924), was also brought into service, providing valuable through facilities from South London direct to Charing Cross and the West End. To enable the trains to be worked in the most satisfactory manner a crossover and siding tunnel were built between the down and up C. & S.L.R. lines just south of Kensington. This involved some interesting engineering work because of the necessity of keeping the traffic running all the time, and the fact that the lines were on different levels. On March 1, 1927, a short connecting line was made between the Piccadilly Line and the north-bound line of the C. & S.L.R. at Kings Cross, to facilitate the interchange of rolling stock.

The passing of the undertaking to the London Passenger Transport Board on July 1, 1933, marked the end of the line as a concern with a title of its own; subsequent improvements, such as new rolling stock and the reconstruction of Kings Cross station and the installation of escalators there, have been carried out under the board's auspices. We are indebted to the London Passenger Transport Board; Lt.-Colonel Mount, Chief Inspecting Officer of Railways; Mather & Platt Limited, Manchester; Crompton-Parkinson Limited, Chelmsford; and Mr. T. E. Haywood, Falcon Works, Coulsdon, for assistance in examining old records.

The King William Street station of the City & South London Railway, as originally constructed with single line of rails and two platforms; it was altered to an island platform on December 12, 1895. *This drawing is done by Mr. E. A. Lovejoy after the one appearing in the volume entitled "London City," published in* 1891, *and to which Mr. C. G. Mott was a subscriber, drawn by Mr. W. Luker, Jr.*

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British Railways and the War—48

Above: A Westminster City warden settling babies for the night in Aldwych tube station (now used exclusively as an air-raid shelter) in hammocks slung between the running rails

Left: At some London tube stations women shelterers, after spending the night on the platform, scrub the particular portion they occupy. Some of them are seen here working to the accompaniment of music provided by one of their number

Distribution of refreshments to London tube shelterers. Left: Preparing the food at Wood Lane depot. Right: Unloading food in containers from a special four-car tube train at Holland Park station

RAILWAY NEWS SECTION

PERSONAL

Mr. Charles J. Hambro, M.C., Chairman of the Great Western Railway Company, has accepted the presidency of the Railway Benevolent Institution for 1941, and Mr. C. H. Newton, Chief General Manager, London & North Eastern Railway, will act as Chairman of the board for next year.

We regret to record the death on December 11, at the age of 84, of Sir Cecil Reeves Harrison, K.B.E., B.Sc., Chairman of Harrison & Sons Limited, Printers to His Majesty the King. Sir Cecil Harrison, who was born on April 26, 1856, was the son of the late Mr. James William Harrison, and was knighted in 1918. He has been Chairman of the company ever since the conversion of the business into a limited company on July 6, 1920. He was one of the founders of the Printing & Allied Trades Association (1890), the Federation of Master Printers, and the Printers' Provident Association; and was Master of the Stationers' Company in 1928. Harrison & Sons Limited has printed THE RAILWAY GAZETTE for upwards of 35 years.

The Minister of Supply has appointed Mr. A. Forbes Smith, Assistant Goods Manager (Southern Area), L.N.E.R., to act as Assistant to the Controller-General of Transportation.

INDIAN STAFF CHANGES

Mr. W. A. Anderson has been confirmed as a Divisional Superintendent on the N.W.R.

Dewan Bahadur Mathra Das, Deputy General Manager, Personnel, E.B.R., has been granted four months' leave as from August 8.

Cammell Laird & Co. Ltd., Birkenhead, announces that Mr. Frank O. John, Naval Architect & Technical Manager of the Shipbuilding Department, Mr. James Hamilton, Shipyard Manager, Mr. Sidney Woodward, Secretary & Accountant, and Mr. Henry R. Humphreys, Repairs Department Manager, have been appointed Local Directors.

We regret to record the death recently of Mr. H. H. Mansfield, Secretary of the Traders' Traffic Conference. Mr. Mansfield was secretary of the conference for 22 years and his long and faithful service undoubtedly had a great deal to do with its success in transport deliberation.

The appointment of Mr. J. P. Thomas by the London Passenger Transport Board to assist in dealing with the problems that have arisen out of the use of tube stations as air raid shelters, which we recorded in our November 15 issue, has been attended with the happiest results. As we have recorded from time to time in our series of articles on "Transport Services and the War," considerable progress has been made in improving the amenities of shelterers in tube stations, and the position today is recorded this week at page 626. Mr. Thomas is the channel of communication between London Transport and the Government departments and local authorities concerned, and, of course, he brings to his task an unexampled knowledge of Underground railway operation resulting from his long period of service as Operating Manager, Railways, to the old Underground group of companies, and as General Manager (Railways) to the London Passenger Transport Board from its formation in 1933 until his retirement five years later. Mr. Thomas was educated at the Durham College of Science and served his apprenticeship with Clarke, Chapman & Co. Ltd., Gateshead. He was appointed Resident Engineer to the British Thomson-Houston Co. Ltd., on the London United and Croydon tramway contracts, and afterwards occupied a similar position on the Central London Railway for its conversion to the multiple-unit system—the first in this country. His services were then transferred from the contractor to the Great Northern & City Railway as Assistant-Engineer for permanent way, signals, lifts, and rolling stock. In 1905 he joined the Underground Electric Railways Company as Superintendent of the Bakerloo line, and his duties were afterwards extended to include the Piccadilly and Hampstead lines, and subsequently to the Central London and City & South London lines, also. In 1915 Mr. Thomas became General Superintendent, London General Omnibus Co. Ltd., and in 1919 was appointed Assistant Operating Manager of the railways and buses. In 1921 he received the appointment of Operating Manager, Railways, under the revised Underground reorganisation. On the formation of the London Passenger Transport Board in 1933 Mr. Thomas was appointed General Manager (Railways), and retired at the end of June, 1938.

Photo] [Modern Transport

Mr. J. P. Thomas

Special Officer, London Transport, for dealing with tube station shelter problems

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Mr. David Eccles, of the Ministry of Economic Warfare, who has been largely instrumental in carrying through the new commercial pact between Spain and this country, is in peacetime the Chairman of the Anglo-Spanish Construction Company which, as a subsidiary of the Central Mining & Investment Corporation, was responsible for the construction of the Santander-Mediterranean Railway.

Mr. C. J. Foster, District Goods & Passenger Manager, Inverness, London Midland & Scottish Railway, has been appointed to a similar position at Perth in place of Mr. D. W. Barrie who is retiring at the end of this month. We published a brief biography and portrait of Mr. Foster at page 779 of our December 22, 1939, issue.

We regret to record the death on November 8 of Mr. Richard Pawley, M.Inst.C.E. Mr. Pawley, who was the son of Mr. R. J. Pawley, Registrar to the Lord Mayor of London's Court, was articled to Mr. J. Hunt, and carried out work on the East London Railway, after which he joined the staff of the Lancashire & Yorkshire Railway at Manchester. He was the Resident Engineer

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on the construction of the Hindley and Pemberton and other railways in that area. In 1889 he was appointed Engineer of the Hull & Barnsley Railway, and retired in 1922. During this period many engineering works were carried out, namely, the extension to the Alexandra Dock in 1900, the South Yorkshire Extension Railway (Wath Branch) in 1902, the G.C., H. & B., & Midland Joint Committee Line, the Braithnell to Laughton Branch in 1909, and the H. & B. and G.C. Joint Line from Gowdall to Braithnell in 1914. Mr. Pawley was also Joint Engineer with Mr. T. M. Newell, Docks Engineer, N.E.R., on the construction of the King George Dock in Hull, which was opened by King George V in 1914. After retirement, Mr. Pawley sat for some years as a Councillor of the Scarborough Corporation, and was a member of the Kingston (Hull) Lodge of Freemasons.

We regret to record the death in Chungking of Mr. Chien Tsung-cheh (or Chung-tse Chien), Managing-Director and General Manager, Lunghai Railway (China).

Mr. Lu Fu-ting has been appointed acting Managing Director and General Manager in his place, according to an official order issued by the Ministry of Communications in Chungking.

Mr. Arthur Mackenzie, Freight Traffic Manager, Chicago, Rock Island & Pacific Railway, retired on October 6. He is being succeeded by Mr. James W. Hill, formerly General Traffic Manager of the Denver & Rio Grande Western Railroad.

We regret to record the death on November 11 of Mr. Charles Bronson Seger. Mr. Seger, who was 73 years of age, was one of the leading experts in the U.S.A. on railway finance. He was corporate President of the Union Pacific Railroad during wartime control from March, 1918, to January, 1919. He continued to act as a Director and Chairman of the Executive Committee of this railway until August, 1932.

Mr. D. B. Hoseason, M.I.E.E., M.I.Mech.E., M.A.I.E.E., has been appointed to the board of the Brush Electrical Engineering Co. Ltd.

We regret to record the death at Devongrove, Dollar, Scotland, on November 24, of Mr. James Walker, late Agent in India of the Bengal & North Western Railway Co. Ltd., in his 83rd year. Mr. Walker officiated as Agent in 1914 in the absence of Mr. E. A. Neville on leave. On Mr. Neville being appointed Secretary, Mr. Walter became Agent in India in 1915. He went on leave in 1922 preparatory to retirement.

Mr. N. K. Mitra, who, as announced in THE RAILWAY GAZETTE of September 6, has been appointed to officiate as Chief Engineer of the East Indian Railway, in place of Mr. E. R. Casement, on leave preparatory to retirement, completed his education at Glasgow University, where he took his B.Sc. degree with distinction. He afterwards served a period of apprenticeship with the firm of Sir Douglas Fox & Partners in London, and on the Great Central Railway in Manchester and Sheffield. Subsequently Mr. Mitra was

Mr. N. K. Mitra, B.Sc. (Glasgow)

Appointed to officiate as Chief Engineer, East Indian Railway

appointed as a covenanted engineer officer in the East Indian Railway, and climbed the ladder of promotion through the grades of Assistant and District Engineer and Superintendent of Way & Works at Howrah, Burdwan, Sahebgurig, Asansol, Lucknow, and Allahabad, to become Deputy Chief Engineer in 1936. Since 1939, he has been serving as Divisional Superintendent, Dinapur. Mr. Mitra is the first Indian to officiate as Chief Engineer of the East Indian system.

We regret to record the death on December 6 of the Rt. Hon. Charles Baron Abertay of Tullybelton. Lord Abertay was a Director of the London & North Eastern Railway, the Central Argentine Railway, the British Oxygen Co. Ltd., and various other commercial and industrial concerns. During the 1914-1919 war he acted in an advisory capacity with the Transport Department of the Admiralty and later at the Ministry of Shipping. Lord Abertay, who received a barony last July, was perhaps better known as Sir Charles Coupar Barrie.

We record with regret the death on November 24, at Giffnock, of Mr. Cecil Herbert Robinson, a Director of the North British Locomotive Co. Ltd. Mr. Robinson was for some years General Manager of the company.

We regret to record the death in Canton, Ohio, on October 14 of Mr. H. H. Timken, at the age of 72. Mr. Timken was co-founder of the Timken Roller Bearing Company, and Chairman of the board for the last 12 years.

We regret to record the death on December 2, of Colonel V. Irving Smart, Canadian Deputy Minister of Transport, at the age of 66. Col. Smart was Professor of Railway Engineering at McGill University from 1907 to 1914, and then became Vice-President & General Manager of the General Railway Signal Company. He was appointed Deputy Minister of Transport in 1930.

Sir Follett Holt, Chairman of the Buenos Ayres Great Southern Railway, announced at the ordinary general meeting held on December 11 that he was relinquishing the chairmanship of the company in favour of a younger man. Mr. J. M. Eddy, C.B.E., Deputy-Chairman, is to succeed him.

Institution of Locomotive Engineers

LUNCHEON AND GENERAL MEETING

The general meeting of the Institution of Locomotive Engineers was held at the Royal Empire Society Building, Northumberland Avenue, W.C.2, on December 10. Mr. O. V. Bulleid, President of the Institution, took the chair at the meeting and also at a luncheon which preceded it.

Mr. Bulleid, after proposing the election of new members, who were adopted *en bloc*, said that Major H. A. Harrison, Secretary of the institution, was seriously ill and that the council proposed to send him a telegram wishing him a speedy recovery.

Referring to the successful luncheon which had been held before the meeting, the President expressed thanks to the dinner committee and said that his own feeling was that the institution dinner should be held early in the New Year. He suggested that the dinner should be held at 4 o'clock in the afternoon; that would enable Scottish members to catch the 7.30 p.m. train to the North. The suggestion was warmly received by the members.

Mr. Bulleid also urged members who had not sent their names to the Central Register to do so, as there was still need for men of their qualifications at several of the Ministries. He added that the council considered it out of the question to hold meetings in the evening, but thought it would be useful if discussions on papers could take the form of written statements. That would help to maintain interest in the *Journal*, which was the main link between members at home and overseas.

Mr. R. H. Whitelegg proposed a vote of thanks to the President, which was carried with acclamation.

TRANSPORT SERVICES AND THE WAR—68

Details of British and enemy air losses—L.N.E.R. travel information posts—L.M.S.R. repair of air-raid damage—Tickets for tube shelterers—Improved travelling facilities—Coastal areas ban reduced—German-Russian through traffic

In view of the attention to dislocation of transport which is constantly paid by air raiders, details of British and enemy losses in the air are of considerable interest, and the following is a classification of officially-announced figures relating to the war in the air during November :—

German aircraft confirmed as destroyed over Britain and British waters :—	
Bombers	97
Fighters and fighter bombers	103
Flying boats	1
Total	201
Italian aircraft confirmed as destroyed over Britain and British waters :—	
Bombers	7
Fighters	13
Total	20
Total over Britain and British waters	221
German aircraft confirmed as destroyed over enemy or enemy occupied territory and enemy waters :—	
Bombers	1
Fighters and fighter-bombers	3
Seaplanes	2
Flying boats	2
Total	8

The total of enemy aircraft destroyed in all quarters of the northern theatre of war was thus 229.

British fighters lost and British fighter pilots saved over Britain and British waters :—	
Fighters lost	53
Fighter pilots saved	28
British aircraft (other than fighters) lost over enemy or occupied territory or enemy waters :—	
Total	48
Italian aircraft destroyed in the Mediterranean theatre of war and Abyssinia, Italian East Africa, etc. :—	
Total	59
British aircraft lost in same areas :—	
Total	18

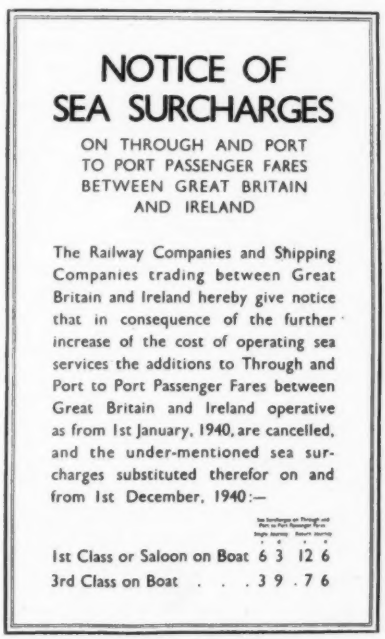
These figures include aircraft destroyed by R.A.F. aircraft and by ground defences of all kinds, but do not include enemy aircraft destroyed by H.M. ships or armed merchant vessels at sea or in port, or by the Fleet Air Arm. In the case of the losses in the Mediterranean and Abyssinian theatres of war, the figures do not include Italian aircraft destroyed by the Greek Air Force or by the armies in the field.

L.N.E.R. Travel Information Posts

The L.N.E.R. has established more than 150 " travel information posts " at well-known tradesmen's shops, Air Raid Warden posts, and other prominent sites in the London suburban area served by the company. These arrangements have entailed much detailed work and are the result of close co-operation between the Passenger Manager and the Advertising Manager. If, for special reasons, train services are not running according to schedule, up-to-date information is telephoned from the nearest station to these local T.I.Ps. where an announcement is written by black crayon in the white panel of a red bill for display in specially-selected positions. When services are normal, a poster bearing a Union Jack and the words " Normal Service " is shown instead. At every railway station concerned a poster, embodying an illustration of the above bill, tells the public, in a panel inscribed by the local station staff, where the T.I.Ps. in the district have been established.

Rapid Restoration on the L.M.S.R.

An example of remarkably quick restoration on an important L.M.S.R. main line was afforded recently when a bomb fell on an up fast line, forming a large crater into which a goods train, fortunately travelling at low speed, fell. Many yards of this line were lifted bodily, and deposited on the top of the down fast line, and the whole covered with earth from the crater and brickwork from the foundations of an old wall. About the same length of the down slow line was lifted several inches, and a similar length of the up slow line was distorted. Further complications were brought about by the


NOTICE OF
SEA SURCHARGES
ON THROUGH AND PORT
TO PORT PASSENGER FARES
BETWEEN GREAT BRITAIN
AND IRELAND
The Railway Companies and Shipping Companies trading between Great Britain and Ireland hereby give notice that in consequence of the further increase of the cost of operating sea services the additions to Through and Port to Port Passenger Fares between Great Britain and Ireland operative as from 1st January, 1940, are cancelled, and the under-mentioned sea surcharges substituted therefor on and from 1st December, 1940 :—
1st Class or Saloon on Boat 6 3 12 6
3rd Class on Boat . . . 3 9 . 7 6

Poster announcement of the Irish Channel increase in fares at the beginning of December

Left : Red bill for display at L.N.E.R. travel information posts.
Right : Poster for station display advising travellers of where the posts have been established

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fact that a sewer in a neighbouring road, which crosses the railway on an overbridge, was broken causing flooding of the line, and arrangements had to be made for the water to be pumped into an alternative sewer. The repairs were carried out in the following order: The up slow line was first restored to its normal alignment. The track was then removed from the down slow line and its bed lowered, and the track then replaced. Next, the crater was filled in, and the up fast line was replaced thereover with spare serviceable material taken from emergency stocks. The debris, including permanent way material, was then removed from the down fast line, and that line restored to its normal condition. The slow lines were opened for traffic at 12.10 p.m. on the day after the night when the bomb was dropped, and the fast lines at 5.50 p.m. on the same day. Thus all four lines were carrying full normal traffic some 18 hours after the damage occurred.

Tickets for Tube Shelterers

Rapid progress is being made with the issue by local authorities of tickets to shelterers in tube stations. The first station to be so covered was Covent Garden, at which tickets were first issued on November 25. The form of ticket is standard for the whole London Civil Defence Region, but the colours are different for every metropolitan borough, and in some cases overprints are used to identify readily the particular station. The front of the ticket is as follows:—

LONDON CIVIL DEFENCE REGION No.....

ROYAL BOROUGH OF KENSINGTON

Admit person named below for shelter at

NOTTING HILL GATE STATION

(CENTRAL LINE)

Name..... *Age*.....

Full Postal Address.....

Nature of Employment.....

Signature of Holder.

Date of Issue **National Registration No.** [ ][ ][ ]

F. WEBSTER,
Town Clerk.

Signature of Issuing Officer.

NOT TRANSFERABLE. **FOR CONDITIONS OF ISSUE SEE BACK**

This ticket expires on

The conditions of issue of these tickets, which are set out on the back, are as follow:—

1. This Ticket does not permit the holder to travel on any portion of the London Passenger Transport Board's system. Where, however, the entrance to the station where the holder is entitled to shelter is closed, he will be entitled to travel free between the nearest open station and his shelter station.
2. The holder enters or remains on the premises of the Board for the purpose of air raid shelter at his own risk in all respects and neither the Board nor their servants or agents shall be responsible to him or his dependants for personal injury (whether fatal or otherwise), loss of or damage to property, or any other loss, damage, costs or expenses, however caused or incurred.
3. This Ticket may be withdrawn or cease to be valid without any reason being given and, in particular, in ANY of the following circumstances:—
   (a) If the station ceases to be available.
   (b) If the holder of this ticket, or any member of his family, commits any offence or creates any nuisance or disturbance in the station, or fails to do his share in keeping that portion of the station occupied by him tidy and clean.
   (c) If the holder, being responsible for children, fails to keep them under control and in particular allows them to play on escalators, lifts or trains.
   (d) If the reserved space on the station premises is not used by the holder for four consecutive nights without explanation.
   (e) If the holder disregards any lawful order or request of a Police Officer, Warden, Board's Official or any other authorised officer.
4. No person suffering from an infectious disease or coming from a house where there is an infectious disease will be allowed to use a Tube station as a shelter. Special shelters have been reserved for such persons.
5. No bedding or belongings to be brought into the station before the appointed time and all bedding and belongings must be removed each morning.
6. No animals may be taken into the station.

USE YOUR STATION QUIETLY AND REGULARLY
HELP TO KEEP IT TIDY AND CLEAN

The number on this ticket corresponds with the space in the station reserved for the holder. The ticket must not be used for any other accommodation.

There are now 30 stations at which regular shelterers have tickets for reserved and numbered places; tickets have been issued to 35,000 shelterers. By Christmas the system will be extended to all stations. The system of reservations is stated to have been a complete success; queues are abolished and there is far less hampering of the railway traffic at the stations. Shelterers with reserved places are taking care of them, some of them even bringing small brushes to dust the space that they are to occupy (as seen in the picture on page 622), and they appear to bring a better type of bedding to the stations. In other words, they now take greater interest in their sleeping quarters than before.

When Your Train is LATE—

—things may have happened in the night, causing timetable changes and the use of different routes—often at the last minute.

It is frequently impossible to make the changes known to passengers in time or to give reasons for cancelling trains, sending you on roundabout routes or causing you to miss connections.

The Railways are straining every nerve and muscle to maintain regular services and to keep the trains running

Information services are being augmented at important stations, where details of alterations will be quickly available.

WE'LL BEAT THE BLITZKRIEG BY HELPING ONE ANOTHER

BRITISH RAILWAYS

Reduce the risk of attack on *YOUR* train

Trains showing lights are targets for bombs and machine-gun bullets.

It is for YOUR protection that train lights are extinguished during Air Raids. There is sufficient light for reading during All-Clear periods.

For your own safety please see that blinds are kept down during black-out hours.

The enemy raiders have a maxim: "Where there's light there's life."

WE'LL BEAT HITLER BY HELPING ONE ANOTHER

BRITISH RAILWAYS

Two recent advertisements of the British railways

Tube Refreshment Services Completed

The London Passenger Transport Board, as agent for the Ministry of Food, on Sunday night last, December 8, completed the institution of refreshment services for shelterers at tube stations. This work has been completed in four weeks. It included: Arranging six railway depots for the receipt and dispatch of food; fitting six special refreshment trains, each equipped with 50 food containers (one is illustrated at page 622); installing 134 canteen points on the platforms; fitting 600 electric boilers and ovens and half a mile of water mains; and engaging, organising, and training a new staff of 1,000 employees. In addition to tea and cocoa, hot soup is now being served. Hot pies and sausages are being served at some stations and shortly will be available at all. The consumption of tea and cocoa now amounts to 12,500 gal. a night and the food distributed every night weighs 7 tons. An emergency service has been organised by which the refreshments may be distributed by road should the railways be seriously interrupted. At the request of the Ministry of Food, London Transport has also undertaken to provide refreshments to the 10,000 people who shelter nightly in the tunnels on the eastern extension of the Central Line.

Mr. George Allison's talks to G.W.R. Employees

Mr. George Allison, the Manager of the Arsenal Football Club, has visited a number of traffic, freight, locomotive, and engineering depots of the G.W.R. to give a series of talks to railway employees during meal time, and we were present at the Old Oak Common locomotive depot on December 6 when Mr. Allison visited that centre. The invitation of the company to Mr. Allison to conduct these talks was recorded in THE RAILWAY GAZETTE of November 15. In the mess room at Old Oak Common he had an enthusiastic reception from a large number of the company's employees, and in a breezy address he drew from his varied experiences as manager of the football club and as a broadcaster to provide an

entertaining address to the men. He concluded by expressing as a member of the public his appreciation to railway employees for the great and valuable efforts they were making and for the essential part they were playing in the drive towards victory. Mr. Allison said that he was himself, as the consequence of the war, now living at his fourth home in little more than a year and he nightly drew comfort and inspiration from the fact that notwithstanding enemy activity the work of the railways was still carried on.

Ban Reduced on Visits to Coastal Areas

By virtue of directions made by Regional Commissioners under the authority of the Minister of Home Security in the summer of this year, restrictions were imposed on visits to certain coastal areas for the purposes of a holiday, recreation, or pleasure. The Ministry of Home Security announced, on December 7, that this ban on visitors has now been reduced for the present to the following areas :—

(i) A coastal strip of approximately five miles depth in Norfolk, Suffolk, and Essex ;
(ii) The whole of Kent except those parts of the county within the boundaries of the Metropolitan Police District, the Urban District of Orpington and the Rural Districts of Sevenoaks and Tonbridge ;
(iii) The coast of Sussex east of Peacehaven and extending inland to the northern boundaries of Battle and Hailsham Rural Districts ;
(iv) The Isle of Wight.

The restrictions on visits to other coastal areas may be re-imposed at any time in the interests of defence.

G.W.R. South Wales Service

An important change has been made in the G.W.R. service from Paddington to South Wales. The 7.55 p.m. express from Paddington to Swansea, no longer needed for the Fishguard boat service owing to the altered sailing times, and now but scantily patronised, has been withdrawn, and this has permitted the reinstatement of the popular 3.55 p.m. service from Paddington, first stop Newport.

Increased Southern Restaurant Car Facilities

A considerable extension of restaurant services on its main West of England line has been made by the Southern Railway. Normally, although restaurant cars run through in the summer season from Waterloo to Ilfracombe and Padstow, in the winter months the cars work between Waterloo and Exeter only, and so make a return journey in the day. From December 2, however, the car on the 10.50 a.m. from Waterloo has begun working through to Ilfracombe, returning on the 10.25 a.m. the next day, and the first through restaurant car workings to run for many years between Waterloo and Plymouth have come into force by extension to Plymouth of the restaurant cars on the 9 a.m., 12.50, and 2.50 p.m. from Waterloo, with a return at 8.20 a.m., 12.20, and 3.50 p.m. from Plymouth (Friary) to Waterloo. Restaurant cars have also been reinstated on the through Brighton—Plymouth service, at noon from Brighton and the 10.10 a.m. from Plymouth. Through coaches for Sidmouth and Exmouth are restored on the 10.50 a.m. from Waterloo, and the corresponding up morning service. On Sundays the restaurant cars on the 11 a.m. and 4 p.m. from Waterloo run through to Plymouth, and return on the 10 a.m. and 3 p.m. from Plymouth to Waterloo, and Sunday working over the Sidmouth, Seaton, and Lyme Regis branches has been restored.

L.N.E.R. Winter Service Changes

The L.N.E.R. sleeping car services between London and Edinburgh, which for many months past have been working over the L.M.S.R. between Euston and Princes Street, at 10.55 p.m. from Euston and 10.15 from Edinburgh, have now been restored to the L.N.E.R. route, leaving King's Cross at 10.15 p.m. for Edinburgh, and Waverley at 10.0 p.m. for London. Since November 18 up L.N.E.R. expresses for King's Cross are now calling regularly at Finsbury Park, thus giving passengers for the north-eastern and northern suburbs the opportunity of getting home considerably quicker than if travelling *via* the terminus. A new L.N.E.R. London suburban table came into operation on December 2. This shows an improved mid-afternoon outer suburban service from King's Cross, to enable residents to get home before blackout; there are new trains at 4.10 p.m. to Baldock, calling at Finsbury Park, Welwyn Garden City, and all stations beyond; 4.30 p.m. non-stop to Welwyn Garden City and stations thence to Hitchin; and 4.57 p.m. to Finsbury Park, Welwyn Garden City, and stations to Hitchin. The afternoon express service to these stations is one of the best ever yet given, there being fast trains from King's Cross at 3.21, 4.10, 4.30, 4.40, 4.57, 5.10, 5.45, and 6.10 p.m.; and no later evening trains are withdrawn. New morning services to London are given at 6.20, 7.0, and 8.18 a.m. from Hitchin, all non-stop from Welwyn Garden City to Finsbury Park; from Welwyn Garden City the morning express service to London is thus at 6.56, 7.20, 7.29, 7.47, 8.7, 8.28, 8.47, 9.3, 9.33, and 9.47 a.m., all these trains but one being either non-stop, or not stopping after Hatfield—again a service never previously equalled.

Facilities for the Forces at St. Pancras

Part of the former St. Pancras hotel has been converted into a canteen and rest room for members of the Forces. This accommodation has been released by the L.M.S.R. to the Salvation Army which is running the canteen. Facilities at the disposal of the troops include a quick-service counter, reading and games room, radio, and hot showers.

Government Evacuation Schemes and the G.W.R.

By reason of its geographical position the Great Western Railway has been concerned particularly with the various evacuation schemes carried out under Government auspices, both as mass movements and on a smaller scale, ever since the first one which began on September 1, 1939. Immediately before the outbreak of war, the arrangements were brought into force for the G.W.R. to evacuate women and children from the populous centres of London, Birmingham, Liverpool, and Birkenhead; later, school children who had been sent to the South and East Coasts were re-evacuated to safer areas, and in June last another evacuation of London school children was carried out. During the first year of the war over 500 special trains were run by the G.W.R., which conveyed a total of 285,000 evacuees (adults and children). Since the completion of these schemes, one plan for school children only and one for mothers and children are being worked. The first plan caters for the day-to-day registration of school children whose parents desire them to be evacuated, and under this plan, during the month of September, over 8,000 passengers travelled by ordinary or special trains. Under the second plan, during the same period, twelve special trains were run with over 5,000 passengers. There was a movement of evacuees (adults and children) from Kent and Sussex to various reception areas on the Great Western Railway during a period in September, when special trains were run, in conjunction with the Southern Railway, for about 28,000 passengers. Hop-pickers who had been working in the Kentish hop-fields did not return to their homes in London, but have been evacuated to other parts, and special trains have been necessary for approximately 5,000 passengers.

Reichsbahn Administration

The German Minister of Transport has decided that the intended amalgamation of the Berlin and Munich Reichsbahn divisional managements shall not take place. The reason given is that the incorporation of the Austrian, Czech, and Polish lines has increased the total area of the system to such an extent that separate administrations remain desirable.

German-Russian Through Traffic

Some details have just reached this country from U.S.A. sources of the new agreement between Germany and Soviet Russia which became effective on October 1, and was designed to establish international routes and border transit stations for passengers and freight on a permanent basis. Under the new regulations, two international routes for passenger service between Berlin and Moscow have been established; the southern route runs *via* Warsaw, Bialystok, and Minsk, and the northern route *via* Königsberg, Tilsit, and Dünaburg. The border point for the southern route is Malkinia, and for the northern Laugszargen. For freight traffic, eight border transit points have been established, and it is said that additional interchange points will be fixed in the near future " to handle constantly increasing international traffic between the two countries." Border stations for freight transit are, in order from south to north, Przemysl, Brest-Litovsk, Platerow, Malkinia, Prostken, Eydtkuhnen, Laugszargen, and Deutsch-Krottingen.

XUM

RAILWAY AND OTHER MEETINGS

Buenos Ayres Great Southern Railway Co. Ltd.

The ordinary general meeting of the Buenos Ayres Great Southern Railway Co. Ltd. was held at River Plate House, Finsbury Circus, London, E.C.2, on December 11, at noon. Sir Follett Holt, K.B.E., M.Inst.C.E., Chairman of the company, presided.

The Secretary, Mr. N. F. E. Grey, having read the notice convening the meeting and the auditors' report,

The Chairman said that since the meeting last year the company had had to face the consequences of the war and also a very poor wheat crop.

Although the wheat and linseed crops had been the lowest for many years, Argentina got through the first year of the war with but little damage to her economic position. The country for the year to June 30 had ended with a favourable trade balance. During the last calendar year the National Debt had increased by 11 per cent., the public revenue and public expenses had reached record high levels and the budget had remained unbalanced to a serious but not tragic extent to a country of such great productive power.

The Southern had carried the usual immense amount of traffic, 57 million passengers, 340,000 tons of parcels and 9½ million tons of other traffic, which included nearly 10 million head of live-stock. The total work done had been greater than in the previous year, although the receipts had been slightly less, but the fall in receipts had been far more than counterbalanced by the restrictions in expenditure brought about by the discriminating and untiring efforts of Major Loewenthal and his officers.

If renewal and other expenditure items had been charged to reserve funds as they had been in the previous year the reduction in expenditure would have been £325,000, which in answer to the urgent need was a very creditable performance and one that materially helped the company to meet its obligations. Revenue provided for the actual outgoings of the year and left a sufficient balance to meet debenture interest and fixed rent charges without making any transfer from reserves as had been necessary in the previous year or having recourse to the bankers.

Although the expenditure on renewals had been met out of the earnings of the year it had not been possible to add to the renewal reserve fund which stood in the books at £7,400,000. This might appear to be, but was not an unduly large sum in relation to the value of the depreciable assets which the company possessed.

It had to be borne in mind also that this reserve was to a major extent invested in the company's business, such as stores and capital works, and could only be released through new capital issues not at present possible.

In round figures the year had resulted in 24 millions of the company's capital receiving the interest due to it, but 48 millions, or two-thirds of the whole, representing the preference and ordinary capital, again had received no return. This had been the case over a number of years, not through any fall in the volume of traffic, for it had increased, but through rate-cutting road competition and the devaluation of the peso, two factors which were under State control. Struggle as the directors might to mitigate the ill-effects, they were left with these heavy burdens to carry, one alone, that of the depreciation of the peso, having cost last year £1,086,000.

As to road competition, rates were still being adjusted here and there to counteract it but good help had been afforded with passengers and parcels by the far better and more economical service now given by the new Diesel driven rail vehicles. Lorry competitors were also feeling the effects of increased taxation and the cost of safety and other regulations which gradually were being imposed by law.

The directors' view has been, and was, that both means of transport should be developed in co-operation and not in enmity. Whilst minds and events were shaping to this inevitable end, the management by every means in its power was untiring in preserving to the railway the traffic that it had created with such great effort and at such heavy cost.

When the war broke out the first general impression had been that substantial benefits would accrue to Argentina through increased exports and better prices, to be followed it had been expected by an improvement in exchange. This for a short time had been the effect, but since the collapse on the Continent the greater part of Europe had been cut off from Argentina's export trade. With new crops becoming due, Argentina remained with some 7 million tons of last season's crops still in the fields or in storage awaiting export. For what period and how far-reaching the effects might be was unknown, and stockholders of this company could only await events. In the end a hungry Europe would take again, as in the past, all that Argentina could produce and then better times would come and the Great Southern would be there and in good physical shape to rebuild its fortunes on the good foundation that it had not lost.

Of the international outlook he had no hesitation in saying that the sympathy of the vast majority of the people in Argentina was wholeheartedly with Great Britain in the war struggle. The population of whatever racial origin remained wedded to the democratic form of government and faithful to the institutions of the country.

The B.A.G.S. with the Western had a joint labour force of 37,000 men made up of Argentines and others; of these some 14,000 were Italian or of Italian extraction, and good workmen they had been and were, as he knew from personal experience. Of this 37,000 men no less than 20,000 were entirely voluntary contributors to the various funds to help the Red Cross and other efforts in Great Britain.

Volunteers for active service were gradually reducing the comparatively small number, some 550, of the British and Anglo-Argentine employees.

The General Manager found it as difficult as they all did to look into even the immediate future but he said by cable that, although the area under the cultivation of grain was down by 10 per cent., a good yield was expected, that pastoral production would be normal and that in spite of the hindrance to exports, he hoped that through the economic plans of the Argentine Government rail traffic would be maintained. So far, since July 1 the fall in receipts and the heavy increase in the cost of fuel and supplies generally had been to some extent counterbalanced by further reductions in expenditure, so that in results the company was now not far behind where it was at this time last year, but the crucial months were to come.

As giving some indication of future possibilities he mentioned that the war with its demand for minerals was causing more interest to be taken in the hidden resources of the Andes. Even coal was now being taken out at the rate of 1,000 tons a month and transported long distances by road to the company's station at Zapala, and there was no doubt that Argentina possessed amongst other good things immense latent mineral wealth from gold downwards. Following the principle of the purchase of the Central Cordoba Railway by the State, projects have been mooted by members of Congress to empower the Argentine Government to purchase other of the foreign owned railways in order to nationalise them. It might be that Congress would authorise the Government to make further acquisitions on terms reasonable to the proprietors but no such authority had yet been given.

Towards helping to meet the heavy increased cost of working the Directors had applied to the Government for permission to increase rates up to 5 per cent. but the fate of the appeal was not yet known.

Not without sadness and regret he had to say that having reached in years three-quarters of a century and feeling it his duty he had asked his colleagues to release him in favour of a younger man from the heavy tasks falling to the Chairman. After the meeting Mr. Eddy would take his place.

The report and accounts were adopted; the retiring directors re-elected, and the auditors reappointed.

Questions in Parliament

Sidings in West London

Mr. A. Barnes (East Ham South—Lab.), on November 26, asked the Secretary for Mines whether he was aware of the inadequacy of coal sidings in the West of London.

Mr. D. R. Grenfell : The siding accommodation in the area referred to has in the past been adequate for the handling of a substantially greater quantity of coal than is currently being dealt with, and I am aware of no grounds on which I could press for the provision of additional sidings by the railway companies.

Jute Sheeting for Wagons

Mr. J. J. Davidson (Glasgow, Maryhill—Lab.), on November 27, asked the Minister of Transport if he had considered the statement sent to him on November 8, 1940, by the Association of Jute Spinners & Manufacturers referring to the use of jute wagon covers for sheeting.

Lt.-Col. Moore-Brabazon : I find that a special method of proofing jute canvas has now been developed and that limited quantities of this canvas are being used for wagon sheeting as a temporary expedient. Other more suitable substitutes for flax sheeting, such as cotton duck, are becoming increasingly available.

Service to Badminton

Mr. G. Isaacs (Southwark North—Lab.), on November 27, asked the Minister of Transport if he was aware of an announcement by the Great Western Railway Company that a new train, leaving Paddington at 3.55 p.m., would call at Badminton to set down first class passengers ; why such convenience was to be restricted to one class of passenger.

Lt.-Colonel Moore-Brabazon, in a written reply, stated : Since this train was first run in July, 1896, there has been no application for it to stop at Badminton to set down third class passengers. Arrangements have been made to set down either first or third class passengers on application being made to the guard.

Railway Station Canteens

Mr. J. Henderson (Manchester, Ardwick—Lab.), on December 3, asked the Secretary of State for War whether his attention had been called to the deplorable condition of the services canteen at Carlisle station, organised by voluntary workers and which catered for 15,000 troops a week.

Mr. R. K. Law (Financial Secretary to the War Office) : I am aware that the present arrangements are unsatisfactory, and negotiations have been proceeding with the purpose of effecting an improvement. There is to be a meeting between representatives of the Mayor of Carlisle, the railway company, the Ministry of Transport, and the War Office, at which I hope a satisfactory settlement will be reached.

Mr. W. Craven-Ellis (Southampton—Nat.) : Will the hon. gentleman see that the position is improved at other junctions besides Carlisle ? Troops arrive late at night and find that there are no refreshments at all available.

Mr. Law : More than 50 main-line stations have already been dealt with in a way which I think would satisfy my hon. friend, and other places are being dealt with as soon as possible.

Parliamentary Notes

S.R. Superannuation Fund Bill

Application has been made to Parliament by the Southern Railway Company for an Act entitled Southern Railway (Superannuation Fund). The object of the proposed legislation is to substitute new rules for certain of the existing rules of the Southern Railway Superannuation Fund established by the Southern Railway (Superannuation Fund) Act, 1927, and to amend that Act.

G.W.R. Superannuation Fund Bill

Application has been made to Parliament by the Great Western Railway Company for an Act entitled Great Western Railway (Superannuation Fund). The object is to authorise a superannuation fund for certain of the salaried staff of the company in substitution for the Great Western Railway Superannuation Scheme, established under the provisions of the Great Western Railway (Superannuation Scheme) Act, 1908.

G.W.R. Directors Qualification Bill

Application has been made to Parliament by the Great Western Railway Company for an Act entitled Great Western Railway (Variation of Directors Qualification), the object of which is to authorise persons holding offices or places of trust or profit in the Great Western Railway Company to become directors of that company.

As was explained in THE RAILWAY GAZETTE of September 20, the appointment of Sir James Milne to the board of the Great Western Railway Company, while continuing to hold the office of General Manager, entails special legislation to alter certain restrictions contained in the Great Western Railway Act, 1835, and in the Companies Clauses Consolidation Act, 1845.

L.M.S.R. Bill

Application has been made to Parliament by the L.M.S.R. for leave to bring in a Bill to authorise the acquisition by the company of lands in the urban district of Bletchley and in the urban district of Billericay to confirm the construction of a siding in the rural district of Repton ; to authorise the stopping and discontinuance of portions of the Manchester, Bolton & Bury Canal ; to amend the company's superannuation scheme ; to authorise the acquisition by the Midland & Great Northern Railways Joint Committee of lands in the urban district of Spalding ; to authorise the stopping up of a local crossing in Spalding by the committee; and for certain other purposes.

Staff and Labour Matters

Ministry Inquiry into Earnings

In July this year the Ministry of Labour conducted an inquiry into the earnings of workpeople and a summary of the information obtained is published in the *Ministry of Labour Gazette* for November. The Ministry obtained from some 60,000 establishments returns of actual wages paid in a week in July.

Average earnings of all workers in the specified industries are compared with those of October, 1938, and in most cases separate comparisons are made for men, women, youths, and boys and girls.

In the metal, engineering, and shipbuilding industries the average earnings of all workers in the week ended July 20 were 85s. 1d., an increase of 43 per cent. over those of October, 1938. The average earnings of men were 100s. 3d. (increase 36 per cent.) ; women, 43s. 11d. (increase 34 per cent.) ; youths and boys, 36s. 4d. (almost 45 per cent.) ; and girls, 25s. 8d. (32 per cent.).

In the motor vehicles and aircraft manufacturing industry average earnings (included in the foregoing figures) were 106s. 5d., and the average earnings of men, 114s. 11d. But a number of the principal firms in these industries employing over 40 per cent. of the total number of workers, did not furnish separate particulars of the earnings of men, women, boys and girls. As the earnings of all workers in these establishments averaged 120s. 7d., compared with 96s. 7d. in the remaining establishments, the average as analysed by sex and age would probably have been considerably higher if the full figures had been available.

The Ministry states that the increases were not wholly due to conditions arising from the war, for between October, 1938, and the beginning of September, 1939, there was a substantial improvement in employment, coupled with a slight rise in the average level of rates and wages, as a result of which the average earnings in many industries must have been appreciably higher at the outbreak of the war than in October, 1938. The average rise in rates of wages during that period is estimated to have been less than 1 per cent.

Between the outbreak of the war and last July increases in rates of wages were granted in the great majority of industries, mainly on account of the rise in the cost of living. It is estimated that the average increase in rates of wages during that period, in the industries for which statistics of average earnings are given, was about 10 per cent.

It was practicable (the Ministry adds) within the limits of time laid down for the inquiry to ascertain the number of working hours to which the earnings of last July relate, but the *Gazette* states " the month of July was a period when, in many establishments engaged in the production of munitions, output was being speeded up as much as possible, and very long hours, often with a seven-day week, were being worked."

XUM

Notes and News

Assam-Bengal Railway Co. Ltd.—The directors have received an intimation from the India Office of the intention of the Secretary of State for India to terminate the company's contract on December 31, 1941.

Nasmyth Wilson & Co. Ltd.—Notice is given that creditors of Nasmyth Wilson & Co. Ltd., which is being wound up voluntarily, are required to notify Mr. A. Holden, 8, the Sanctuary, Westminster, S.W.1, on or before January 18, 1941. Particulars of details or claims and names and addresses of solicitors should be included.

Bombay, Baroda & Central India Railway Company.—The directors have received from the High Commissioner for India, on behalf of the Governor-General of India in Council, notice determining on December 31, 1941, the contracts between the Secretary of State in Council of India and the company by virtue of which the company works and manages the railway lines constituting the undertaking.

Bank Holiday on January 1.—The Treasury has announced that it is proposed that Wednesday, January 1 next, should be observed as a close holiday in all banks in England, Wales, and Northern Ireland, and that the necessary Proclamation for the purpose was approved by His Majesty in Council on December 4. This step has been taken solely in order to enable the banks, whose staffs are seriously depleted by the war, to attend without interruption to the work of that day, and the day will not be a general public holiday.

The Institute of Transport, Metropolitan Graduate & Student Society.—The 19th annual report and accounts of this society were issued last week. At the end of September there were 357 members of whom 161 are main-line railway employees, 94 from London Transport, 24 from road transport companies, and the rest from Government, semi-official, and commercial quarters. It was not possible to carry out the ordinary programme of the society on account of the war, but some Saturday afternoon meetings were arranged which, considering the difficulties created by staff evacuation, were very well attended.

Rohilkund & Kumaon Railway Co. Ltd.—The preference stock transfer books will be closed from December 21, 1940, to January 4, 1941, for the purpose of preparing the interest warrants payable to those stockholders whose names are on the register at the time of closing the books.

Export of Rubber.—Under an Export Control Order by the Board of Trade dated December 4, export licences are necessary since December 12 for the export of the principal varieties of rubber to all destinations. Previously goods of this kind could be exported to destinations in the British Empire without licence. The varieties of rubber include balata and gutta percha, compounded unvulcanised rubber, waste and re-claimed rubber, and rubber latex.

Agreed Charges.—Notice is given by the Railway Rates Tribunal in *The London Gazette* of December 3 that applications for the approval of agreed charges between railway companies and a large number of traders have been lodged with the tribunal. The applications may be inspected in London at the District Goods Manager's Office, L.M.S.R., Broad Street station, E.C.2, and notice of objections to any of them must be filed not later than today, December 13.

Air Transport in India.—The Begampet aerodrome, the lighting equipment and extensions to which were completed early in the year, can now be ranked among the best in India. This aerodrome is owned and worked by the Nizam's State Railways Air Department. The work of levelling the sites for the landing grounds at Aurangabad and Adilabad, being carried out by the Department, is in progress.

Irish Traffic Returns

IRELAND		Totals for 48th Week			Totals to Date		
		1940	1939	Inc. or Dec.	1940	1939	Inc. or Dec.
		£	£	£	£	£	£
Belfast & C.D. (80 miles)	pass.	2,583	1,983	+ 600	156,087	124,995	+ 31,092
	goods	762	559	+ 203	31,525	22,973	+ 8,552
	total	3,345	2,542	+ 803	187,612	147,968	+ 39,644
Great Northern (543 miles)	pass.	10,750	9,100	+ 1,650	588,700	541,950	+ 46,750
	goods	18,950	16,400	+ 2,550	649,700	540,750	+ 108,950
	total	29,700	25,500	+ 4,200	1,238,400	1,082,700	+ 155,700
Great Southern (2,076 miles)	pass.	28,880	27,960	+ 920	1,692,050	1,765,908	− 73,858
	goods	63,570	60,649	+ 2,921	2,329,849	2,204,627	+ 125,222
	total	92,450	88,609	+ 3,841	4,021,899	3,970,535	+ 51,364
L.M.S.R. (N.C.C.) (247 miles)	pass.	5,750	3,950	+ 1,800	274,820	226,210	+ 48,610
	goods	7,630	3,430	+ 4,200	207,700	147,880	+ 59,820
	total	13,380	7,380	+ 6,000	482,520	374,090	+ 108,430

Forthcoming Meetings

Dec. 17 (*Tues.*).—**Assam-Bengal Railway Co. Ltd.** (Ordinary general), 56, Victoria Street, S.W.1, at 12.30 p.m.

Dec. 17 (*Tues.*).—**Taltal Railway Co. Ltd.** (Annual general), Northgate House, 20-24, Moorgate, E.C.2, 1.45 p.m.

Dec. 18 (*Wed.*).—**East Indian Railway Company** (Half-yearly general of annuitants), 73-76, King William Street, E.C.4, at 2 p.m.

Dec. 19 (*Thurs.*).—**Central Argentine Railway Limited.** (Annual general), Winchester House, Old Broad Street, London, E.C. 3, at 12.30 p.m.

British and Irish Railway Stocks and Shares

Stocks	Highest 1939	Lowest 1939	Prices Dec. 10, 1940	Prices Rise/Fall
G.W.R.				
Cons. Ord.	38	21½	33½	−½
5% Con. Pref.	92	71	84½	+½
5% Red. Pref. (1950)	98	83	93½	—
4% Deb.	103	91	105	−½
4½% Deb.	105½	93¾	103½	—
4½% Deb.	110	99	108½	—
5% Deb.	121	109½	112½	—
2½% Deb.	63½	54	62	—
5% Rt. Charge	117	104	111½	—
5% Cons. Guar.	111	96½	111½	+1½
L.M.S.R.				
Ord.	17	9½	13⅞	−⅜
4% Pref. (1923)	46½	20	37½	−½
4% Pref.	63½	37½	51½	+½
5% Red. Pref. (1955)	83	58½	73½	—
4% Deb.	98½	85	98½	—
5% Red. Deb. (1952)	109	101½	106	—
4% Guar.	87⅞	73	84½	+½
L.N.E.R.				
5% Pref. Ord.	5⅞	3½	3	—
Def. Ord.	3½	1⅛	1½	—
4% First Pref.	38½	19	33½	−½
4% Second Pref.	15	7⅛	10½	−¼
5% Red. Pref. (1955)	55	38	50	—
4% First Guar.	78½	60	74½	+½
4% Second Guar.	68½	47	61	—
3% Deb.	71⅛	57	68½	−1½
4% Deb.	93	76	83	—
5% Red. Deb. (1947)	106½	98	102	—
4½% Sinking Fund Red. Deb.	104½	96	100½	—
SOUTHERN				
Pref. Ord.	78	46½	46	—
Def. Ord.	19¼	7	10⅜	−¼
5% Pref.	100	76	83	−¼
5% Red. Pref. (1964)	102¾	94	87½	—
5% Guar. Pref.	116½	103	111½	+½
5% Red. Guar. Pref. (1957)	112½	102½	102½	—
4% Deb.	103	91½	101½	—
5% Deb.	118½	109½	110½	—
4% Red. Deb. (1962–67)	106	98	101½	—
4% Red. Deb. (1970–80)	102	96	106½	—
FORTH BRIDGE				
4% Deb.	98½	81	87½	—
4% Guar.	95	80	85½	—
L.P.T.B.				
4½% "A"	115	103	107½	+½
5% "A"	123	106½	115½	+½
4½% "T.F.A."	105	100½	103	—
5% "B"	117½	102	103	—
"C"	84	63⅞	32½	+½
MERSEY				
Ord.	24½	17½	20½	—
4% Perp. Deb.	93⅛	88½	89	—
3% Perp. Deb.	77	65½	59½	—
3% Perp. Pref.	55	49½	54½	—
IRELAND				
BELFAST & C.D.				
Ord.	6	3	4	—
G. NORTHERN				
Ord.	6	2½	3	—
G. SOUTHERN				
Ord.	13½	8	5	—
Pref.	26	10	13	—
Guar.	40½	22	16½	+½
Deb	57	45⅛	42	—

PARLIAMENTARY NOTICES

IN PARLIAMENT

Session 1940-41

London Midland & Scottish Railway

NOTICE IS HEREBY GIVEN that application has been made to Parliament in the present Session by the London Midland & Scottish Railway Company (hereinafter referred to as "the Company") for leave to bring in a Bill for purposes of which the following is a concise summary :—

1. Acquisition by the Company by compulsion or agreement of lands in the Urban District of Bletchley in the County of Buckingham and in the Urban District of Billericay in the County of Essex.

2. Confirmation of construction by the Company of a siding in the Parish of Foston and Scropton, Rural District of Repton in the County of Derby.

3. Special provisions as to entry and compensation.

4. Stopping up and discontinuance of portions of the Manchester Bolton and Bury Canal in the Borough of Swinton and Pendlebury the Urban Districts of Whitfield, Kearsley and Little Lever, all in the County of Lancaster, and in the County Borough of Bolton and in connection therewith the removal of restrictions upon working coal.

5. To amend the London Midland & Scottish Railway Superannuation Scheme.

6. Acquisition by the Midland and Great Northern Railways Joint Committee (hereinafter referred to as "the Committee") by compulsion or agreement of lands in the urban district of Spalding in the County of Lincoln, Parts of Holland.

7. Stopping up of a level crossing and diversion of a footpath by the Committee in the said urban district of Spalding.

8. To re-enact with or without amendment powers of the Company and of the Committee relating to holding selling disposal and building on or over lands of the Company or the Committee.

9. Incorporation application amendment or repeal of Acts.

And Notice is hereby further given that on or before the 20th day of Novenber 1940 plans of the lands which may be taken compulsorily with a book of reference to such plans were deposited for public inspection as follows (that is to say) :—As regards the lands in the County of Buckingham with the Clerk of the County Council at his office at Aylesbury as regards the lands in the County of Essex with the Clerk of the County Council at his office at Chelmsford and as regards the lands in the County of Lincoln Parts of Holland with the Clerk of the County Council at his office at Boston.

And that copies of so much of the said plans and book of reference as relates to each of the several areas hereinafter mentioned in which the lands are situate were on or before the 20th day of November, 1940, deposited for public inspection as follows (that is to say) :—as relates to the Urban District of Bletchley the Urban District of Billericay and the Urban District of Spalding with the Clerk of the District Council of each said district at his office.

On and after the 4th day of December, 1940, a copy of the Bill may be inspected and copies thereof obtained at a price not exceeding two shillings for each copy at the office of Mr. W. O. Hickson, Divisional Solicitor, Hunts Bank, Manchester, and at the Stationmaster's Office at the following railway stations of the Company and the Committee, viz. :—Bletchley, Laindon, Derby and Spalding, and also at the undermentioned offices.

Dated this 27th day of November, 1940.

ALEXANDER EDDY,
L.M.S. Headquarters,
Watford, Herts,
Chief Legal Adviser.

BEALE & CO.,
22, Great Smith Street,
Westminster, S.W.1.
Parliamentary Agents.

Railway and Other Reports

Bombay, Baroda & Central India Railway Company.—The directors on December 2 authorised the payment in January next, in addition to the half-year's guaranteed interest of £1 10s. per cent., of an interim dividend of £1 10s. per cent., in respect of the company's profits for the financial year 1940-41, making a total payment of £3 per cent., less tax.

Midland Uruguay Railway Co. Ltd.—Gross receipts for the year to June 30, 1940, were £131,659 (£104,319), working expenses were £122,538 (£108,265) and net receipts £9,121 (debit £3,946). Government guarantee was again £24,475, and total revenue was £37,923 (£21,125). After meeting fixed charges, taxes, and so forth, there is a debit balance of £7,470 (debit £24,584), and debit forward is £98,468 (£90,998).

Taltal Railway Co. Ltd.—Receipts for the year ended June 30, 1940, amounted to £29,591, a decrease of £4,092, or 12·15 per cent. as compared with 1938-39. Working expenses, at £39,701, showed a small decrease of £304, and loss on working was £10,110, as against £6,321. Adding interest £4,340, profit on exchange £300 and sundry credits, to the £6,542 brought forward, balance available is £3,799, which the directors propose to carry forward. Number of passengers fell from 8,391 to 6,280, or 25·16 per cent., and the tonnage of goods was 61,287, against 88,600, a decrease of 30·83 per cent. The principal factor in the reduction of gross receipts was again the falling off in the traffic handled for the nitrate oficinas.

Argentine Great Western Railway Co. Ltd.—The report for the year to June 30, 1940, shows that under the working agreement the company received from the Buenos Ayres & Pacific Railway Company and distributed in respect of the year : interest on the 1st and 2nd debenture stock, paid January 1, 1940, and July 1, 1940, £136,000. The company also received from the Pacific Company £272,600 and paid one year's arrears on Great Western 5 per cent. debenture stock, bringing payment of arrears up to April 1, 1936. The Pacific Company was unable to make any payment on account of dividend on the Great Western 6 per cent. guaranteed preference stock. The stockholders' committee, in accordance with the powers conferred upon it by the schemes of arrangement of 1932, 1935, and 1938, has extended the moratorium period in respect of the interest on the Great Western 5 per cent. debenture and 6 per cent. guaranteed preference stock to June 30, 1941. The length of line at June 30, 1940, was 1,448 track-miles. Passengers numbered 487,375, a decrease of 40,394, but goods tonnage, 2,121,648, was 170,923 tons higher.

William Asquith Limited.—Profit for the year to August 15, 1940, was £100,155 (against £93,302). After £80,000 (£50,000) for taxation, the directors recommend a dividend of 5 per cent. (same) on the ordinary shares, transfer £10,000 (£20,000) to general reserve and carry forward £29,278 (£30,632).

Contracts and Tenders

It is reported in Argentina that the materials and properties of the Rosario-Mendoza Railway are to be sold at public auction. The track, including rails and sleepers, is to be taken up between Rosario and Dean Funes—a total of 50 km.—and will be sold to the highest bidder.

The Turkish and British Governments have concluded arrangements which they hope will bring about a considerable increase in trade through commercial exchanges between Turkey and the British Empire. During the validity of the arrangements provision is made that payments between Turkey and the sterling area shall be effected at the existing Turkish lira-sterling rate of exchange, and that special accounts shall be created in order to facilitate commercial and other payments between the two countries. This arrangement is complementary to the trade and payments agreement signed in London on February 3, 1940.

As was recorded in THE RAILWAY GAZETTE of November 22, 22 locomotives built in Great Britain for France will be included in equipment to be purchased by the Turkish Ministry of Communications. These locomotives are of the 2-8-0 type, and correspond in their design and proportions with those of the "8F" class introduced by Mr. W. A. Stanier, Chief Mechanical Engineer of the L.M.S.R. in 1935. An illustrated description of one of these engines was included in our issue of May 31, when certain modifications which had been introduced were mentioned.

XUM

Railway Stock Market

Earlier in the week the stock and share markets showed a reactionary trend, but subsequently sentiment improved under the influence of the latest war news and security values were inclined to recover. As was to be expected, home railway stocks moved fairly closely with the day-to-day tendency of markets, but they were less active. Uncertainties of wages and costs continued to dominate the position, but the rather lower prices were attributed more to a falling-off in demand than to selling, which appeared to be very moderate. Prior charges remained firmly held, and in many instances the yields offered continue to be regarded as attractive, when considered in relation to the high investment merits of these stocks. In a few instances, debenture stocks were lower on balance, but this reflects deduction of half-yearly interest payments. The view is growing that, although in most instances, junior stocks offer substantial yields, it is unlikely they will become the centre of strong market activity in the near future, because it is generally assumed that the dividend position in respect of 1940 can be assessed without much difficulty. Dividends at the same rates as last year continue to be expected. Home railway junior stocks will probably continue to be valued on a high-yield basis until uncertainty is removed in regard to the basis on which the financial agreement with the Government is to be revised. Nevertheless, there is, of course, no reason why they should not respond readily in price in the event of a general upward movement in security values.

As compared with a week ago, movements have been mostly adverse to holders, but were only fractional. Great Western ordinary was 33¼, compared with 33½ a week ago; the preference and guaranteed stocks were unchanged at 84½ and 111½ respectively. Moreover, Great Western 4 per cent. debentures remained at 105. Exceptionally, L.M.S.R. senior preference at 51½ was half a point higher, but the 1923 preference lost a similar amount to 37. On the other hand, L.M.S.R. guaranteed was maintained at 84 and the 4 per cent. debentures at 98½; yields on the two last-named stocks, which are, of course, high-grade investments, are attractive. Moreover, the yields on L.M.S.R. preference stocks appear to be very generous, that on the senior preference being virtually 8 per cent., and that on the 1923 preference as much as 10¾ per cent.

L.N.E.R. 3 per cent. debentures were lowered from 70 to 68½. L.N.E.R. first guaranteed remained at 74; the second guaranteed declined fractionally to 60½. Whereas the first preference remained at 33½, the second preference was 10¾, compared with 11¾ a week ago. Southern preferred was maintained at 46, and the deferred stock at 10¾ was also unchanged on balance. While the preference stock was slightly lower at 83, the guaranteed kept at 110½. On the other hand, Southern 4 per cent. debentures were half a point lower at 101½ xd.

In other directions, chief attention centred on Canadian Pacific preference, which moved up sharply on the 2 per cent. final dividend, which with the interim payment, makes the full 4 per cent. distribution on this stock. Elsewhere, slightly better prices ruled for Buenos Ayres & Pacific 4½ per cent. debentures, and also for Leopoldina debentures. The preference stock of the Antofagasta (Chili) & Bolivia Railway was easier.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1939-40	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1939	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1939	Prices: Lowest 1939	Prices: Dec. 10, 1940	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	1.12.40	25,370	+ 8,740	48	826,220	664,830	+ 161,390	Ord. Stk.	10¾	4¼	5	Nil
	Argentine North Eastern	753	30.11.40	ps. 128,300	— ps. 19,500	22	ps. 3,660,600	ps. 3,713,300	— ps. 52,700	,,	4½	2	2	Nil
	Bolivar	174	Nov. 1940	3,350	— 1,330	48	42,500	47,530	— 5,030	6 p.c. Deb.	7½	3½	6½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	5¾	4½	6*	Nil
	Buenos Ayres & Pacific	2,801	30.11.40	ps.1,310,000	—ps. 6,000	22	ps.24,942,000	ps.26,764,000	—ps.1,822,000	Ord. Stk.	5½	2	2½	Nil
	Buenos Aires Central	190	12.10.40	$86,200	— $15,600	15	$1,452,600	$1,736,900	— $284,300	—	—	—	—	—
	Buenos Ayres Gt. Southern	5,082	30.11.40	ps.2,276,000	—ps. 90,000	22	ps.42,052,000	ps. 43,834,000	— ps.1,782,000	Ord. Stk.	13¾	4½	5	Nil
	Buenos Ayres Western	1,930	30.11.40	ps. 796,000	—ps. 12,000	22	ps.14,476,000	ps 15,811,000	— ps.1,335,000	,,	10½	4	3	Nil
	Central Argentine	3,700	30.11.40	ps.1,465,600	—ps 309,150	22	ps.30,571,500	ps. 41,655,100	—ps11,083,600	,,	11½	4	3	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4	1½	2	Nil
	Cent. Uruguay of M. Video	972	30.11.40	26,791	+ 416	22	442,851	399,776	+ 43,075	Ord. Stk.	2½	7/8	1½	Nil
	Costa Rica	188	May 1940	17,282	— 7,020	48	193,339	245,516	— 52,177	Stk.	24½	18	17½	11⅛
	Dorada	70	Oct. 1940	11,700	— 1,300	43	122,400	136,700	— 14,300	1 Mt. Db.	104½	102	98	6 7/8
	Entre Rios	810	30.11.40	ps. 190,100	— ps. 19,500	22	ps. 5,047,800	ps. 5,604,700	—ps. 556,900	Ord. Stk.	6	3	1½	Nil
	Great Western of Brazil	1,016	30.11.40	14,100	— 700	48	499,500	423,900	+ 75,600	Ord. Sh.	3/-	1/2½	7/8	Nil
	International of Cl. Amer.	794	Sept. 1940	$325,789	— $37,196	39	$4,405,419	$4,486,381	— $80,962	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	7½d.	7½d.	½	Nil
	La Guaira & Caracas	22¾	Nov. 1940	5,405	— 1,650	48	72,500	67,780	+ 4,720	—	—	—	—	—
	Leopoldina	1,918	19.10.40	27,288	+ 3,141	42	961,659	868,452	+ 93,207	Ord. Stk.	2½	¾	¾	Nil
	Mexican	483	7.10.40	ps. 270,900	— ps. 300	14	ps. 3,816,500	ps. 3,954,000	—ps. 137,500	,,	1⅛	¾	⅛	Nil
	Midland of Uruguay	319	Oct. 1940	12,058	+ 3,732	17	45,052	34,464	+ 10,588	—	—	—	—	—
	Nitrate	386	30.11.40	5,309	— 16	48	160,206	110,420	+ 49,786	Ord. Sh.	2½	1½	1⅜	7 1/2
	Paraguay Central	274	30.11.40	$3,302,000	+ $166,000	22	$74,192,000	$70,933,000	+ $3,259,000	Pr. Lt. Stk.	45½	36	38	15½
	Peruvian Corporation	1,059	Nov. 1940	63,144	+ 1,349	22	328,469	316,494	+ 11,975	Pref.	1 1/16	7/16	1½	Nil
	Salvador	100	12.10.40	₰7,115	+ ₰112	15	₰132,667	₰144,475	— ₰11,808	—	—	—	—	—
	San Paulo	153½	24.11.40	32,500	— 2,475	47	1,694,700	1,540,307	+ 154,393	Ord. Stk.	38	20	28	8 1/2
	Taltal	160	Oct. 1940	2,595	— 765	17	9,320	7,785	+ 1,535	Ord. Sh.	⅜	6/6	¼	9¼
	United of Havana	1,353	30.11.40	12,975	— 4,910	22	329,638	382,744	— 53,106	Ord. Stk.	2	¼	¼	Nil
	Uruguay Northern	73	Oct. 1940	1,271	+ 301	17	4,159	3,654	+ 505	—	—	—	—	—
Canada	Canadian National	23,695	30.11.40	1,437,379	+ 136,340	48	44,758,083	36,954,774	+ 7,803,309	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	74½	60	74	5⅜
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	100¼	76	102	3 1/2
	Canadian Pacific	17,153	30.11.40	1,043,200	+ 92,000	48	30,926,000	27,510,000	+ 3,416,000	Ord. Stk.	7⅜	3½	5½*	Nil
India†	Assam Bengal	1,329	30.4.40	45,187	+ 6,529	4	135,060	120,437	+ 14,623	Ord. Stk.	76½	60	77½	3⅛
	Barsi Light	202	10.10.40	3,427	+ 1,350	27	78,052	61,402	+ 16,650	—	—	—	—	—
	Bengal & North Western	2,091	Oct. 1940	235,425	+ 35,048	4	235,425	200,377	+ 35,048	Ord. Stk.	277	229½	250	6⅜
	Bengal Dooars & Extension	161	Sept. 1940	14,625	+ 508	26	78,405	66,243	+ 12,162	,,	91	84½	212	3⅛
	Bengal-Nagpur	3,269	30.9.40	245,025	+ 23,858	26	4,212,552	3,841,155	+ 371,397	,,	94½	83½	92½	4 7/16
	Bombay, Baroda & Cl. India	2,986	30.11.40	303,225	— 3,150	34	6,415,200	5,730,450	+ 684,750	,,	108	90	102½	5⅛
	Madras & Southern Mahratta	2,967	10.10.40	154,575	+ 28,906	27	3,142,314	3,028,675	+ 113,639	,,	104½	92	99½	7⅛
	Rohilkund & Kumaon	571	Oct. 1940	43,500	+ 5,745	4	43,500	37,755	+ 5,745	,,	280	263	250	6⅜
	South Indian	2,542	10.10.40	128,641	+ 26,546	27	2,425,715	2,204,757	+ 220,958	,,	102½	88	84½	5 1/2
Various	Beira	204	Sept. 1940	73,186	—	52	905,968	—	—	—	—	—	—	—
	Egyptian Delta	623	30.9.40	7,602	+ 1,784	26	89,819	94,881	— 5,062	Prf. Sh.	¼	¼	¼	Nil
	Kenya & Uganda	1,625	—	—	—	—	—	—	—	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	55	39	47½	7⅜
	Midland of W. Australia	277	July 1940	11,397	+ 139	4	11,397	11,258	+ 139	Inc. Deb.	91½	87½	82½	4⅛
	Nigerian	1,900	31.8.40	27,727	+ 3,258	22	783,893	601,488	+ 182,405	—	—	—	—	—
	Rhodesia	2,442	Sept. 1940	482,182	—	52	4,910,860	—	—	—	—	—	—	—
	South Africa	13,287	2.11.40	708,225	+ 58,224	31	21,069,160	20,020,323	+ 1,048,837	—	—	—	—	—
	Victoria	4,774	Aug. 1940	888,289	+ 190,022	9	1,756,717	1,383,157	+ 373,560	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of 1/16. Argentine traffics are now given in pesos

* Quotation is of June 17, 1940; dealings subsequently prohibited † Receipts are calculated @ 1s. 6d. to the rupee